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PRESIDENT'S ADDRESS

AMERICAN SOCIETY OF ORTHODONTISTS

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ACCORDING to precedent, custom and the rule of this Society, it becomes necessary for me to inflict my presidential address upon you. My personal opinion is that a president should deliver his address and outline his suggestions when he assumes office, rather than when he is about to be demoted. One has only to read the addresses of our past-presidents to realize that many good suggestions and recommendations have been submitted which all too often have received but scant attention or consideration. Being aware of this and also for many other reasons, which are readily apparent, I shall not attempt to offer numerous recommendations, but will entrust this duty to more capable hands—the committees, which will later report to you. I shall, however, as briefly as possible discuss the build-up to the present educational status of our specialty and, with no thought or intent of appearing presumptuous, consider the future trend.

We are all aware that since the organization of this Society considerable progress has been made in gaining a better realization of the scope of the orthodontic problem. There has been considerable growth in our membership in the past decade, even though the rate of increase in new members has been somewhat handicapped owing to economic conditions since 1929. Orthodontia, as a specialized branch of dentistry, has been very fortunate in having among its followers many members enthusiastic to study and to progress. Their greatest handicap, if any, is probably an overemphasis on mechanics or, rather, a more intense study of the mechanical phase to the exclusion of the biologic. This is

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easily understood, as it is history repeating itself as in the general practice of dentistry, attempting to correct effects without equal diligence to determine and combat the cause.

The major portion of our members arrived (if I may use that term) by virtue of the short course plan—others through apprenticeship under the guiding hand of those whose most able teacher was experience—and some of us being adept or filled with desire have assumed that we were called. It is worthy to note that regardless of the avenue pursued each method has produced some who have been or are as yet a credit to the profession. The statement regarding education and training, made by a former president of this Society, still holds good: "It does not matter where one gets it, the important thing is, did he get it?" The handicap of our past and present plan of orthodontic education and instruction is the subject which I wish to discuss. From the beginning, study has been subservient to specialized, mechanical *systems,* which has led to diversified effort, rather a system of survival of the fittest, with loss of unified endeavor to comprehend the orthodontic problem, in the progress toward the common goal.

Let us take stock of the situation—not as we think or hope that it is, but as it actually exists at the present. The total number of cases under orthodontic treatment, by those who limit their practice to orthodontics, is but a fraction of the number under treatment by the dental profession. In the periods of high tide and peak prosperity of a few years ago, there was always so much to do for the fee we asked that our progress was taken for granted, with slight attention being given to prevention or to promote the cooperation of the general practitioner. The less observant cannot help but be aware, regardless of how unjust it may seem to us, that there is a continually widening breach between us, as specialists, and the general practitioners. In our enthusiasm to carry on we failed to work equally as hard to pass our views on to our fellow dentists. Their orthodontic problems were not our orthodontic problems. We did not speak the same language. We have even considered different courses of undergraduate instruction, and one state did not consider it necessary for one to be a dentist before becoming a specialist in dentistry, even for a time providing a separate Board of Examiners.

The ever increasing need for more orthodontists—our castigation of the plan and value of undergraduate instruction—the ever increasing inquiries for the fountainhead of orthodontic teaching—our unending arguments over the short and the extended postgraduate course—and our exposé and condemnation of the cure-all orthodontic laboratories, have led us to what? Vague solutions of how to serve the masses and the underprivileged—a few added or extended courses in some of the schools—antagonism of the profession—archaic orthodontic discussions in the dental journals (some of them under the direct supervision of organized dentistry), and an ever increasing number of those in general practice, who, on account of demand, mostly a personal economic one, are attempting to render a service without the necessary preparation, believing generally that the problem is only a mechanical one. Short intensive courses are popular, conserve time, are an economic factor, but are greatly handi-

capped, in addition to other things, by limited clinical observation. On the other hand, longer courses, while offering a longer period for observation, have also developed a self-imposed handicap, in addition to others, in establishing a definite number of hours as a basic fundamental requirement. An hourly basis may be necessary to any schedule of study, but the fact must not be overlooked that more applied hours may be offered in a limited time than are utilized in a long period. One might say that the past and present plan of postgraduate instruction is wrong. Certainly in most cases it is unsatisfactory and insufficient. Why? Mainly because many of us, who sought postgraduate instruction, were not properly prepared to receive other than the mechanical phase of it. The fundamental fault lies with the method of undergraduate instruction, for even when more attention is given to orthodontics, the added time is devoted to mechanics. The student's major need is the proper background. Skill to construct and apply mechanical aid will rapidly be acquired if, first, one knows why and when it may be utilized. It has often been said that a little knowledge is a dangerous thing. With no thought other than to offer helpful criticism, the neutral critic is convinced that the major portion of undergraduate instruction in orthodontics is, with few exceptions, designed to satisfy clamor. This seems to be the rule, judging from careful examination of many graduates, their expressed beliefs on orthodontics in dental meetings, in the literature and in the inquiry columns of the dental journals. It is also evident that something is amiss in postgraduate instruction, owing to the high percentage who seek and apparently fail to find the answer after attending several courses. One method is an apparent effort to attain an educational requirement so that the graduate may pass the standard set by the various State Boards of Examiners; the other is often the sincere effort to provide and supply that which has previously been missed or to satisfy the demand of the profession. If it were possible to enforce unsupervised study and if the student could also properly evaluate individualism and overcome his preceptor's intolerance of the belief that there is little if any good in the views of others, the apprenticeship probably offers the best medium for preparation to specialize. All agree that the time has long since arrived when something must be done to enable the profession to render an enlarged service to those who need it. An improved service may be fostered as we curtail the activities of the orthodontic laboratories, but we fail to improve the situation properly unless we provide a worth-while substitute, and at the same time safeguard the public from experiment and exploitation through standardizing some general qualifications and legal requirements for those who offer a specialized service to their patients. Standards and qualifications are set up as requirements for membership in this Society, while it is of far greater importance to sponsor protection to the public from the unqualified operator. This can be accomplished only through education of the public and by being definitely frank in our education of the profession. If we do not care to assume this responsibility, we should not complain of the present abuses, nor later offer an alibi for our failure to direct. We must realize that if we are perfectly honest in our belief that we may be helpful in correcting a certain percentage of malocclusions, we

should also strive, equally as much by every way and means, to prevent malocclusions. The desire for cures, when not found to be attainable in other fields, has made it necessary to arrive at far better end-results through prevention. It is permissible to admit that at present we do not entirely know how to prevent, but it is not permissible to continue to treat effects and to neglect to strive fully to determine, abort and prevent the cause. Even with our present limited knowledge of prevention, it now offers us the best method to render a greater service, not only to the underprivileged and masses, but to all classes. This, however, we do not recognize to any great extent, and the realization of its value is negligible in the profession generally, where it really has an opportunity to function to the benefit of unnumbered thousands. The members of this Society should, as individuals, willingly join with that constructive group in the profession who now are endeavoring to promote dentistry for children, as it offers us an ideal opportunity to present rational and practicable methods for early observation. This will lead to prompt recognition and prevention of many factors, which uncorrected are contributing to certain definite types of malocclusion. They need us, but to a far greater extent we need their united cooperation. Many basic orthodontic fundamentals enter into an unlimited number of the daily efforts of every general practitioner, mostly unrecognized, as our specialty is considered a phase of dentistry apart from general practice. Too many specialists have the same opinion. The future prospective specialist should be well grounded in all phases of dentistry by experience and should continue to be conversant on every progressive step made in dentistry after his specialization. The failure to realize this tends to defeat the desired cooperation for a better understanding of kindred problems and is responsible for the expression, that "a specialist is one who knows more and more about less and less." The results incident to limiting one's practice are beneficial, on the one hand, but are too often secured or attained at the expense of a narrowed perspective. This is apparent and applies to all professions. Regardless of the real activating motive it is commendable that a large percentage of the dentists desire to do something to correct the positions of the teeth for many of their patients, but misguided effort is not a qualification or a basis upon which to build.

Unless the student shows a special desire or adeptness for the mechanical phase of orthodontia, only the high spots are touched, the necessary tie-up, with all phases, is lost; it is the beginning of complete separation. His instructors in other dental subjects have by belief and practice set orthodontia apart, and the major portion of all dental instruction is devoted to restorative dentistry. One can understand how many of the popular removable restorations are also active orthodontic appliances. Function, growth, occlusion, pathology, trauma and, in fact, every topic for study in dental instruction, including every type of restoration, are of equal importance to both the general practitioner and the specialist in any branch of dentistry. The general practitioner is not the only one at fault; the specialist is equally negligent in keeping abreast of all progress. We have but to note that it is only in the past few years that dentistry for children has been receiving extra attention, it being necessary to present it with the fanfare of a new discovery in order to secure interest. With

the dental profession attempting to remedy effects rather than seeking to remove the cause, it is easy to understand why the major portion of dental services rendered today is for the construction and placing of artificial dentures.

We state in our Constitution that the object of this organization is "to strive for higher standards of excellence in orthodontic teaching; to contribute our part to dental health service." Without fear of successful contradiction, it can be said that regular participation in the activities of this Society has improved and will continue to improve each member. This is worth while, necessary and vitally important; although, if we compare our number to the total number in the dental profession, we are aware that only a small percentage are really interested in the progress of orthodontia—the effort is too individualistic. We must correct our failure to be concerned about the problems of all phases of dentistry if we desire and expect the profession to be interested in and to seek to understand our problems and what we may consider our progress. The need readily becomes apparent to those who have endeavored to eliminate the evils of orthodontic laboratories, and through their contacts with the accepted, neutral leaders of other phases of dentistry, have learned through experience that the belief is generally accepted that such laboratories fulfill a real purpose. The difficulties encountered and the arguments presented give positive evidence of their lack of understanding or their realization of the progress made in orthodontia during the past two decades. If this were not so, willing cooperation would be given unsolicited, and all controversial discussions would be eliminated. We are all aware of the futility and abuse of orthodontic service by proxy. Laws for the protection of the public, requiring proper qualifications for legal registration of specialists, are necessary, but this plan or method will be far less beneficial than to correct the condition at its source. I hope and trust that I have not by vague suppositions and theories appeared pessimistic; nor, on the other hand, am I pleading for the ideal. The remedies must originate from those who through experience, precept and practice are intrusted with the responsibility of supplying the increasing need for qualified practitioners, who can and who desire to carry on and solve the orthodontic problem. In all sincerity, however, I might add that the basic value of any teaching or instruction can be measured to the extent that the desire to study is inculcated in the student. Many have the ability to teach, but few can make the student properly enthusiastic. Qualified surgeons do not arrive overnight by any long or short course method of instruction, but rather by experience and practice. It is regrettable that necessary qualifications cannot be acquired rapidly; however fundamental requisites for the successful practice of surgery are acquired during undergraduate instruction, and in equal measure the future dentist should acquire through instruction and study the complete background. Adding to this the experience gained in a period of general practice will tend toward a better understanding of growth, development and function of the dental apparatus and its associated structures.

As dentistry more fully realizes that its field of endeavor, while being but a part, is also directly subservient to the rhythmic growth and development of the whole individual, the first step toward prevention and the legal, moral right to advise or attempt corrective treatment will have occurred. One ever

present miracle is the arrival of the first dentition and its replacement by the permanent denture. It is something that is but faintly understood by the profession generally, evidently because of superficial instruction; as few realize its importance or recognize at the proper time not only the major deviations but also the minor ones as well. Naturally a better understanding can be obtained only through proper instruction, observation and experience, and while this knowledge is only one of the many requirements for dental practice—most certainly for specialization—it necessarily takes time to be acquired. A high percentage of the dental departments of our universities and colleges should admit, if they are frankly honest, that orthodontic instruction is limited and is of doubtful value and that they expect, by inference and evasion, those who desire additional orthodontic instruction to seek postgraduate courses; yet they knowingly continue to graduate students who have the legal right to practice orthodontics in all its phases. I certainly do not infer that an over large orthodontic clinic, with student operators, is the solution for perfection of the undergraduate. In fact, a few selected cases, under competent treatment and supervision, with detailed explanations to the student, would be far more beneficial for clinic instruction; however this would curtail the revenue now derived by many orthodontic clinics. We should not let our divergent views on diagnosis or an overemphasis of mechanical treatment serve as a shield to protect our lack of knowledge of the etiology of malocclusion. A more comprehensive understanding of etiology will arrive much more quickly by proper observation of probable malocclusions in their incipiency. The entire dental profession is, therefore, the ideal medium to detail to watch, provided they are taught the reason why, the reason for and the way to look. This method will tend to produce those who from experience will not be misled by advertised, magic, mechanical devices; nor will they be filled with a desire to improve upon or to play pranks with nature. Of equal importance, they cannot be classed with that group who, having eyes, see not and, having ears, hear not; as they will be competent to demand and to receive the highest type of postgraduate instruction.

The trial and the test of the possibilities of prevention are not within the province of the orthodontist, but become almost wholly the duty and the responsibility of the family dentist, who has access to early observation; however, it is the definite responsibility of this organization to seek the cooperation of the dental profession and, because of our past unconcern, make every effort to instruct them and to direct their efforts. The hope of the masses and of the underprivileged for orthodontic services depends upon the success with which we, as orthodontists, meet this challenge.

It becomes my sad duty to advise that during the past year the following members have been called to the Great Beyond: Dr. Elizabeth E. Richardson, San Francisco, and Dr. Percy N. Williams, Tucson, Arizona.

The Necrology Committee will later present suitable resolutions and convey our sympathetic condolences.

In conclusion may I add that I shall ever be mindful and grateful for the honor you have conferred upon me in selecting me to serve as your presiding

officer. Being fully aware of my inabilities, I beg of you to overlook any errors of omission or commission, with the assurance that any mistakes that have been, or may be, made, are of the mind and not the heart. I greatly appreciate the fine cooperation which has been given me by all the officers and all committees, both elective and appointive. All have worked willingly, giving their time to their duties and to the requests made of them. Your attention for careful consideration is directed to the report of the committee which will make constructive recommendations for a more unified and efficient governing of this Society and also to the reports of those committees which will present valuable information relative to the legislative, economic and educational problems. The local committees have made every plan for your comfort and entertainment. The scientific program merits your support and attention; however, this large attendance is evidence that we all anticipate a worth-while meeting. If it can be truthfully said, by all, at the close of this meeting that it has been beneficial, the officers and all committees will be very appreciative, and we will enjoy the satisfaction of knowing that we have done the very best that we knew how to do.

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PRELIMINARY REPORT ON TOOTH MOVEMENT AFTER LOSS OF THE FIRST PERMANENT MOLAR IN 500 ADOLESCENTS*†

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DURING the examination of over 3,000 pupils at the Dental Service of the New York City Vocational Schools, two outstanding conditions were noted which seemed to be of more than passing interest to the orthodontist. One is the frequent loss of the first permanent molars; and two, the changes in positions

Model No.____ Clinic No.____ Date____

Examined by____ Imp's. by____

Name____ Address____

Class____ Age at Exam.____ Age at Imp's.____

Type of previous dental service____

(O-operat: Surg.-Extract or surgery; E-Exam; Pro-Prophy.)

Cavities____ Exteeth____ Teeth Missing____

Molars Missing____ Filled____ To be extracted____

Occlusion: Class 1__ 2__ 3__ Mouth hygiene: Good, Fair, Bad

Right Bucco-Labial UPPER Bucco-Labial Left

8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 7 8

Distal — Lingual — Bucco-Labial — Distal

8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 7 8

LOWER

	UR	UL	LL	LR
Age MlExtraction				
Age at examination				
Time elapsed: (Mos-Roman; Years-Arabic)				
1st Bi Dist: (Millimeters)				
(a) Degree and direction of rotation				
(b) Degree and direction of inclination				
2nd Bi Dist: (Millimeters)				
(a) Degree and direction of rotation				
(b) Degree and direction of inclination				
2nd Molar Mesial: (Millimeters)				
(a) Degree and direction of rotation				
(b) Degree and direction of inclination				
3rd Molar Mesial: (Millimeters)				
(a) Degree and direction of rotation				
(b) Degree and direction of inclination				
Both (BD-MM)				
No Movement				

Fig. 1.—Record chart.

of the first and second premolars and the second molar in the jaw quadrant from which the first molar had been extracted. A clinical check was made of 500 patients who showed missing first molars. Since the data thus obtained could not be rechecked, however, they were discarded and a more permanent method was decided upon. We obtained 500 sets of dental impressions of pupils, male and

*Read before the New York Society of Orthodontists, Nov. 23, 1936.

†From the Dental Service of the New York City Vocational Schools.

female, from 15 to 19 years of age, who showed one or more first molars to have been extracted at some previous time. From these impressions 500 sets of casts were poured. Thus a permanent record was made available which can be rechecked at any time. This paper presents a preliminary report on this study.

The condition of the mouth was charted in each case. (Fig. 1.) The age of the pupil when each first molar was lost, was determined as accurately as pos-

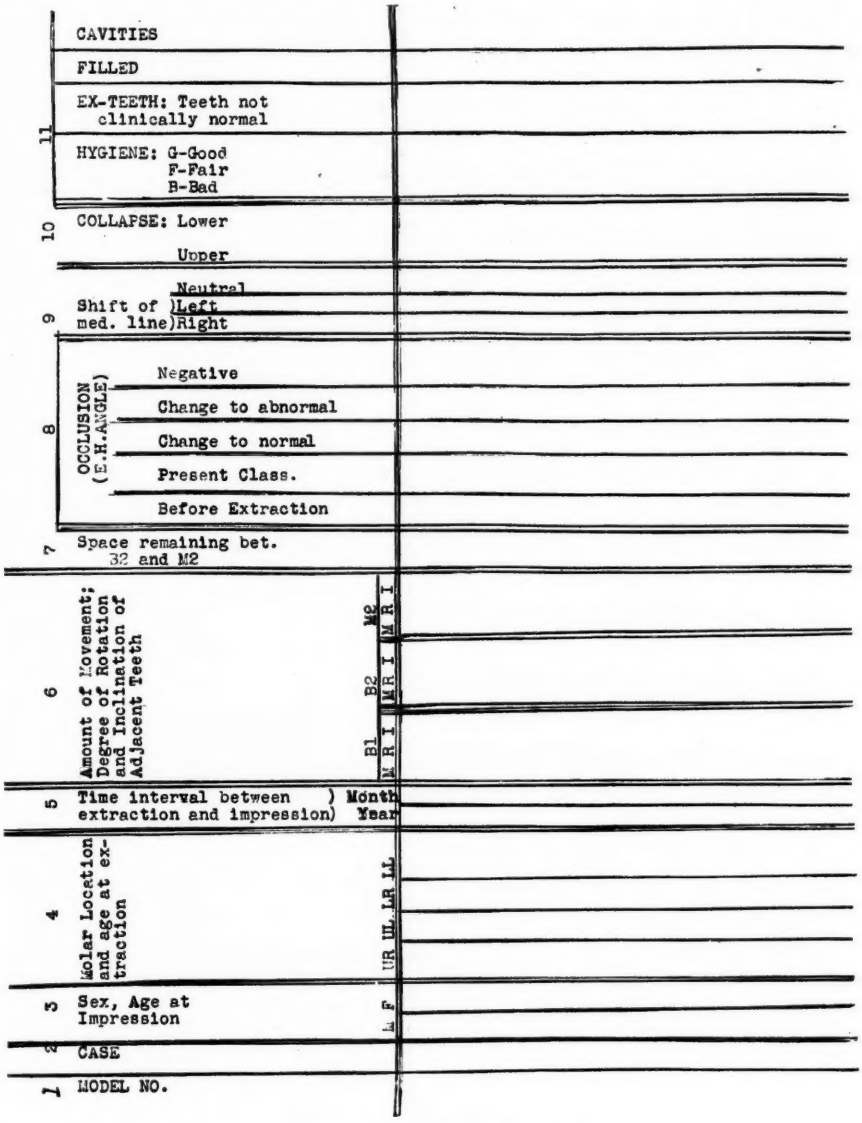

Fig. 2.—Master data chart.

sible by ascertaining the class at school, the nearest birthday and the school attended at the time of the extraction. The name and address of the dentist who performed the extraction; the anesthetic used, etc., also tended to refresh the patient's memory. The event of losing a first molar, the first of the "second" teeth to be lost, seemed to be well marked in the memory of most children. Furthermore, after a lapse of five years, the length of the interval between the

loss of the first molar and the taking of the impression is not so important a factor in the correlations made as may at first appear.

In addition to the usual dental charting of carious, filled, redecayed or missing teeth, the following were also noted: Types of previous dental service received by the patient, i.e., operative, extractions, prophylaxis or examination. The term "exteeth" was used to denote the number of teeth that were visibly not clinically sound, i.e., missing, filled, carious, redecayed, etc. The amount of movement, inclination and rotation of the first and second premolars and second molars and the amount of space remaining between the second premolar and second molar, in the jaw quadrant from which the first molar had been extracted, were inserted after measuring each of the respective 500 sets of casts. The instruments used in measuring were a Boley gauge, a protractor, and a millimeter rule. All movement was recorded in millimeters. Rotation and inclination were measured in degrees.

In computing tooth movements, the position of the teeth on the opposite side, where the first molar had not been lost, was found to be helpful in many cases. Due consideration was given to local factors affecting the occlusion of the teeth, e.g., the classification of the occlusion originally manifested; other necessary teeth, tongue and lip habits, abnormal frenums, etc.

Master data sheets (Fig. 2) were made which allowed for various recordings. These sheets included the following information:

1, Model number; 2, clinic case number; 3, sex, and age at time of impression; 4, age when the first molar was extracted and the location of the extracted first molar according to maxillary, mandibular, left and right jaw quadrants; 5, the time interval in years and months elapsing between the loss of the first molar and the taking of the impression; 6, amount of movement and degrees of rotation and inclination of the first and second premolars and the second molar in the jaw quadrant from which the first molar had been extracted; 7, the amount of space remaining between the second premolar and the second molar

TABLE I

NUMBER AND PERCENTAGE OF CHILDREN IN DIFFERENT AGE GROUPS WHO SHOWED ONE, TWO, THREE, OR FOUR FIRST MOLARS MISSING AT TIME OF EXAMINATION

AGES	15 YEARS		16 YEARS		17 YEARS		18 YEARS		19 YEARS	
MOLARS LOST	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
1	31	43.4	84	42.0	53	35.5	23	39.6	9	37.8
2	29	40.6	77	38.5	53	35.5	18	30.96	7	29.4
3	7	9.8	30	15.0	31	20.8	14	24.1	5	21.0
4	4	5.6	9	4.5	10	6.7	3	5.2	3	12.6
TOTAL	71		200		147		58		24	= 500

which was formerly occupied by the extracted first molar; 8, occlusion (E. H. Angle), a, before extraction; b, present classification; c, change to normal; d, change to abnormal; e, negative; 9, shift of median line, a, right; b, left; c, neutral; 10, collapse: maxillary, mandibular to right or left; 11, a, hygiene: G-good, F-fair, B-bad; b, exteeth: teeth which were not visibly normal; c, filled teeth; d, cavities present.

Table I and Fig. 3 show the number and percentages of children in the different age groups from 15 to 19 years who had lost one, two, three and four molars at the time of examination and the total number of children examined in each age group. The frequency graphs (Fig. 3) of one and two molars lost is highest in the 15 year group and declines with increase in age. The graph for three molars lost is low in the 15 year group and increases sharply with increase in age until eighteen years is reached. The graph for four molars lost shows a fairly even distribution among the 15, 16, 17 and 18 years of age groups but

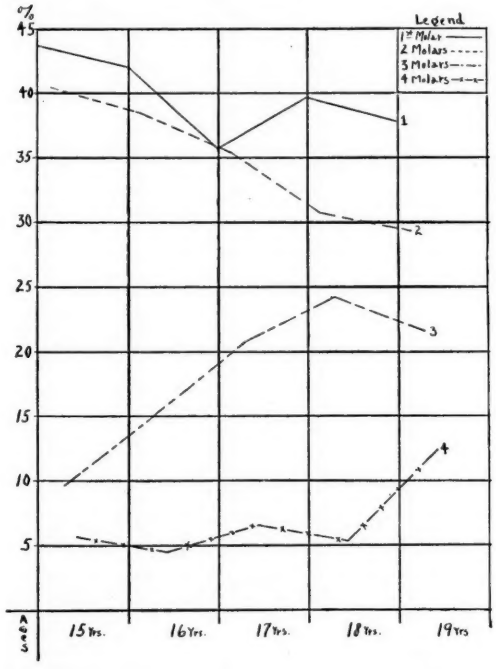

Fig. 3.—Percentage of children in the different age groups who showed 1, 2, 3, or 4 first molars missing at time of examination.

rises sharply at 19 years. However, the difference in distribution of one, two, three and four first molars lost per child does not vary more than 11 per cent in any one age group.

TABLE II

NUMBER OF MOLARS LOST AT AGE OF EXAMINATION

MOLARS LOST	1		2		3		4		
AGES	NO.	%	NO.	%	NO.	%	NO.	%	TOTAL
15	31	15.5	29	15.8	7	8.1	4	13.8	71
16	84	42.0	77	41.8	30	34.5	9	31.0	200
17	53	26.5	53	28.8	31	35.6	10	34.4	147
18	23	11.5	18	9.8	14	16.1	3	10.4	58
19	9	4.5	7	3.8	5	5.7	3	10.4	24
Total	200	100.0	184	100.0	87	100.0	29	100.0	500

Table II shows the number and percentage of children who showed one, two, three and four first molars missing at the time of examination, distributed according to the different age groups from 15 to 19 years. Here we find 200 chil-

dren to have lost one first molar; 184 had lost two first molars; 87 had lost three first molars and 29 had lost four first molars. This gives a total of 945 first molars lost in 500 children. However, one molar in each of the quadrants was omitted because of missing premolars or second molars. The data were then computed of 941 molars. In either event the total number of first molars missing per child is 1.88.

The bar graph in Fig. 4 shows the distribution by jaw quadrants of the 941 molars actually computed. The mandibular left molar is the one most frequently

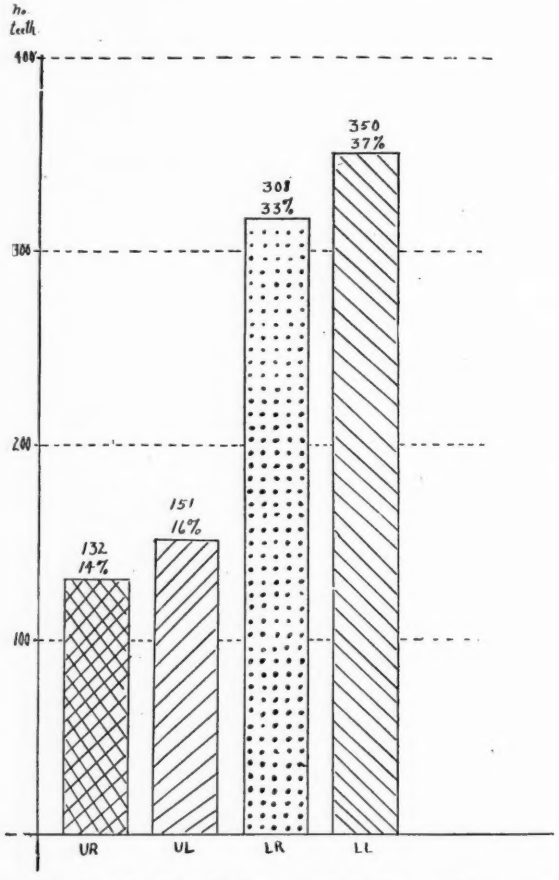

Fig. 4.—941 first molars missing in 500 children, or 1.88 first molars per child, divided according to the quadrants of the jaws from which the molars were extracted.

lost; the mandibular right molar is second in decreasing frequency, the maxillary left molar is third in decreasing frequency and the maxillary right molar is least frequently lost. (Table III.)

TABLE III

NUMBER OF MOLARS LOST BY QUADRANTS

LOCATION	NUMBER TEETH LOST	PER CENT OF TEETH LOST
Maxillary right	132	14
Maxillary left	151	16
Mandibular right	308	33
Mandibular left	350	37
Total	941	100

The different age groups in Table IV do not refer to the same children but to different groups of children at different ages as found in the total of 500 children examined. These ages were arrived at by subtracting the interval elapsing between the age at the time of extraction and the age when the examination was made and the impression was taken; e.g., if the patient was sixteen at the time of examination and the first molar had been extracted four years previously, the age at the time of extraction was computed as 12 years. In the group of children studied, molars were found to have been lost during the age ranges between 6 and 18 years. Table IV shows the number and percentage of 1, 2, 3

TABLE IV

NUMBER AND PERCENTAGE OF ONE, TWO, THREE, AND FOUR FIRST MOLARS LOST PER CHILD FOR EACH AGE GROUP FROM SIX TO EIGHTEEN YEARS, DISTRIBUTED ACCORDING TO THE AGE WHEN THE FIRST MOLARS WERE LOST

AGES	NO. 1	%	NO. 2	%	NO. 3	%	NO. 4	%
6	2	66.6	1	33.3	0	0.0	0	0.0
7	9	55.8	4	24.8	1	6.2	2	12.4
8	14	56.0	7	28.0	4	16.0	0	0.0
9	19	70.3	6	22.2	2	7.4	0	0.0
10	32	60.8	12	22.8	7	13.3	1	1.9
11	38	60.8	18	28.8	4	6.4	2	3.2
12	40	44.0	38	41.8	10	11.0	2	2.2
13	56	56.0	28	28.0	16	16.0	0	0.0
14	37	34.0	48	45.1	19	17.9	4	3.8
15	44	40.0	38	34.6	17	15.5	11	10.0
16	20	33.2	22	36.5	15	24.9	3	4.98
17	9	55.8	7	44.2	0	0.0	0	0.0
18	2	28.6	2	28.6	2	28.6	1	14.3

and 4 first molars lost at each age interval. Of the group of children who lost first molars at 10 years, 60.8 per cent had lost 1 first molar; 22.8 per cent had lost 2 first molars; 13.3 per cent had lost 3 first molars; and 1.9 per cent had lost 4 first molars. At 15 years, 40 per cent had lost 1 first molar; 34.6 per cent had lost 2 first molars; 15.5 per cent had lost 3 first molars; and 10 per cent had lost 4 first molars.

When we distribute the number and percentage in each group of one, two, three and four first molars lost, over the age range from 6 to 18 years (Fig. 5), we find the peak for one first molar lost at age 13, which shows 56 children or 17.4 per cent. The peak for two first molars lost is at 14 years with 48 children or 20.6 per cent of the total in this group. For three first molars lost, the peak is also at 14 years with 19 children for a total of 19.6 per cent. The peak for four first molars lost is at 15 years with 11 children or 41.8 per cent of the total in this group. With the exception of the group of "4 molars missing," there seems to be very little difference in the percentage frequency of distribution when related to the age when the first molars were lost.

Of the 941 missing first molars studied in the 500 children, the number of molars lost according to the interval elapsing between the time when the first molar was lost and the time when the impression was taken showed a fairly even frequency of distribution between 1 to 8 years (Fig. 6). About 90 per cent of the cases studied showed first molars lost from 1 to 8 years before the impressions were taken, the variance in percentage frequency of distribution within

this age range being only 8 per cent. The remaining 10 per cent were distributed among the intervals 3 to 6 months and 9 to 12 years. It can be seen that the study provided a fairly even distribution of data in the 1 to 8 year intervals after extraction.

As a basis for the study of tooth movement the symbols in Table V were adopted.

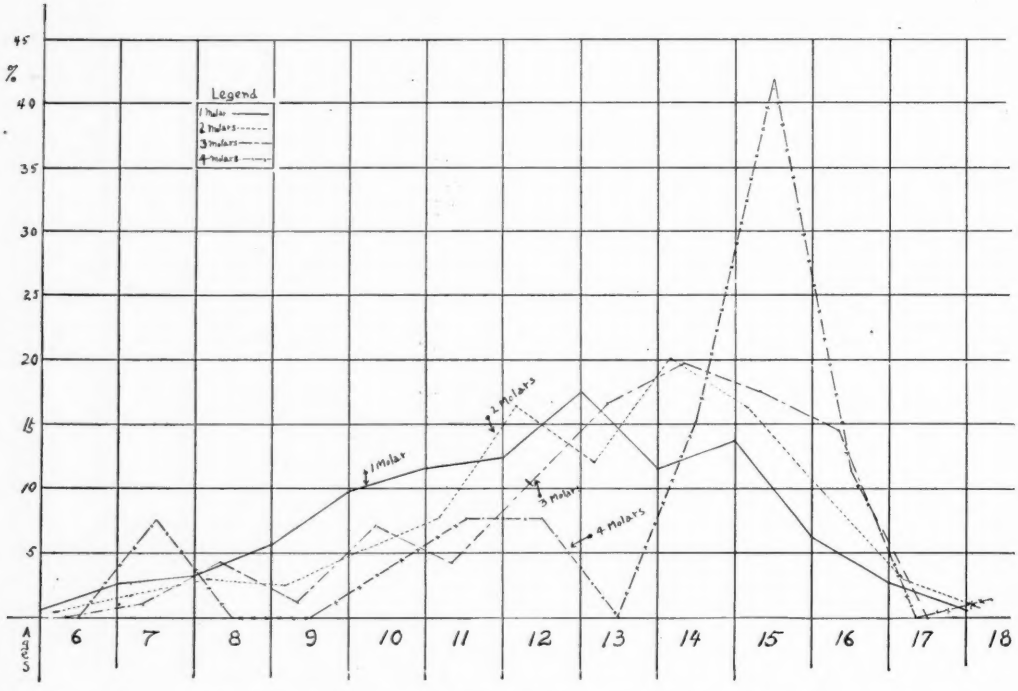

Fig. 5.—Percentage frequencies of 1, 2, 3, and 4 first molars lost, distributed over an age range 6 to 18 years, when each of the 941 first molars was lost.

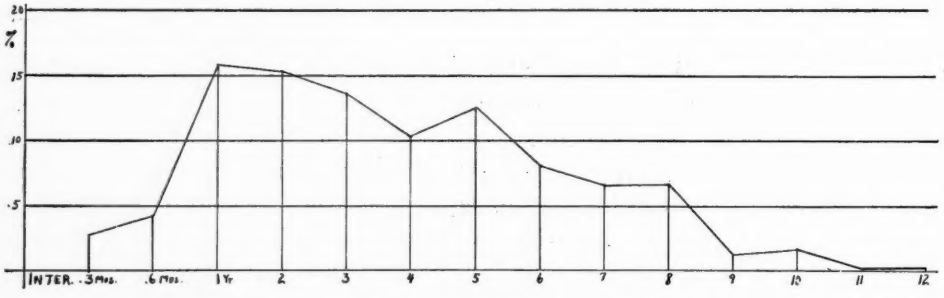

Fig. 6.—Percentage frequency of distribution according to the interval between the age at time the first molar was extracted and the taking of the impression, in 941 cases.

Where the first and second premolars and the second molar did not show evidence of change of position, the designation O-O-O is used. Where only the second premolar moved, O-D-O is used; where both premolars moved distally but the second molar remained in position, D-D-O is used. Where the first and second premolars showed no evidence of change of position, but the second molar had moved mesially, O-O-M is the designation used. Where the first premolar showed no change of position but the second premolar moved distally

and the second molar mesially, O-D-M is used. Where both premolars moved distally and the second molar moved mesially, D-D-M is used as a symbol.

TABLE V

PM1	PM2	M2	SYMBOL DESIGNATION OF POSITION
1. No movement	no movement	no movement	= O-O-O
2. No movement	moved	no movement	= O-D-O
3. Moved	moved	no movement	= D-D-O
4. No movement	no movement	moved	= O-O-M
5. No movement	moved	moved	= O-D-M
6. Moved	moved	moved	= D-D-M

Table VI shows the distribution among the various positions mentioned, according to the movement evidenced by the first and second premolars and the second molar in the 941 quadrants studied from which the first molars had been

TABLE VI

POSITIONS OF PM1, PM2, AND M2 IN 941 CASES IN WHICH THE FIRST MOLAR WAS EXTRACTED, RELATED TO THE QUADRANTS OF THE JAWS

LOCATION OF EXTRACTED MOLAR	PM1 PM2 M2 NO MOVEMENT		PM1 AND M2 = O PM2 DIST.		M2 = O PM1 AND PM2 DISTAL		PM1 AND PM2 = O M2 = MESIAL		PM1 = O PM2 = DISTAL M2 = MESIAL		PM1 AND PM2 = DISTAL M2 = MESIAL		TOTALS	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
U. R.	1	0.75	0	0	2	1.5	24	18.2	14	10.1	91	68.9	132	14
U. L.	0	0	0	0	7	4.6	28	18.5	16	10.5	100	66.2	151	16
L. R.	5	1.6	4	1.2	21	6.8	37	12.1	33	10.7	208	67.8	308	33
L. L.	8	2.2	2	0.57	25	7.1	39	11.1	38	10.8	238	68.0	350	37
Totals	14		6		55		128		101		637		941 teeth for 500 cases	
		1.5		0.63		5.8		13.6		10.7		67.6	1.88 molars per child	

extracted. It will be seen that only 14 or 1.5 per cent out of 941 quadrants were in the O-O-O position; 6 or 0.63 per cent were in the O-D-O; 55 or 5.8 per cent were in the D-D-O; 128 or 13.6 per cent in the O-O-M; 101 or 10.7 per cent in the O-D-M and 637 or 67.6 per cent in the D-D-M position. This paper presents only a preliminary analysis. There is no correlation, for example, of the amount of movement of the first and second premolars and the second molar to one another. Furthermore, we are not considering at this time the actual amount of movement of each of these teeth, nor are we relating the amount of movement to the degree of rotation and inclination of the various teeth, etc.

The graph in Fig. 7 shows the percentage frequencies of the maxillary right, maxillary left, mandibular right and mandibular left quadrants in relation to the six designated positions. The maxillary right and maxillary left quadrants showed from 0 to 0.75 per cent of the teeth in the O-O-O position, while the mandibular right and mandibular left quadrants showed from 1.6 per cent to 2.2 per cent respectively in the same position of designated move-

ment. In the O-D-O we have 0 per cent for both the maxillary right and left quadrants, and 1.2 per cent and 0.57 per cent respectively for the mandibular right and mandibular left quadrants. In other words, the tendency for the second premolar to move distally, while the first premolar and the second molar remained stationary was slightly greater in the mandible than in the maxilla. In the D-D-O position there is a percentage of 1.5 and 4.6 for the maxillary right and left quadrants respectively, while the mandibular right showed 6.8 per cent and the mandibular left showed 7.1 per cent in the D-D-O

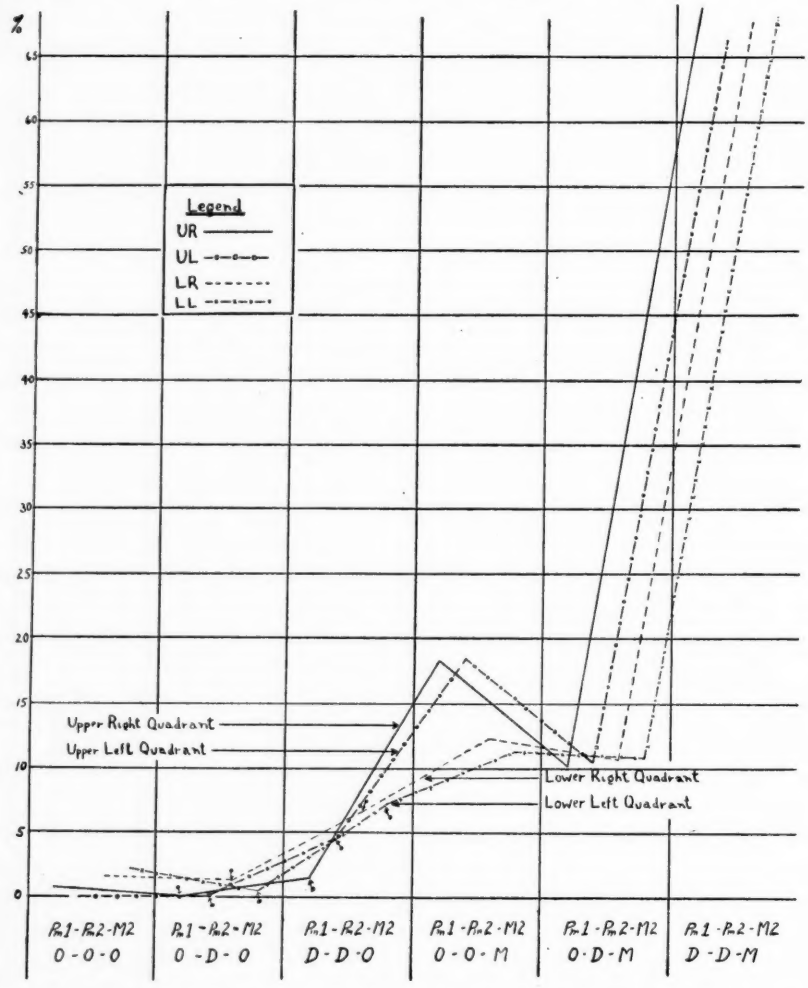

Fig. 7.—Percentage frequencies of distribution according to designated positions of first and second premolars and second molar in the 941 jaw quadrants.

position. Thus we see that the tendency for the premolars to move distally while the molar remains stationary, is greater in the mandible than in the maxilla. In the O-O-M position the central tendencies are more marked between the maxillary and the mandibular quadrants. Here we find the mandibular right and the mandibular left to be 12.1 per cent and 11.1 per cent respectively while the maxillary right shows 18.2 per cent and the maxillary left shows 18.5 per cent. In other words, the tendency for the premolars to remain stationary while the molar moves mesially is greater in the maxilla than in the mandible.

TABLE VII

NUMBER AND PERCENTAGE OF QUADRANTS IN MANDIBLE AND MAXILLA IN EACH INTERVAL, FROM THREE MONTHS TO TWELVE YEARS, BETWEEN EXTRACTION OF FIRST MOLAR AND TAKING OF IMPRESSION, DISTRIBUTED ACCORDING TO VARIOUS POSITIONS ASSUMED BY QUADRANTS

INTERVAL		PM1-PM2-M2 O O O		PM1-PM2-M2 O D O		PM1-PM2-M2 D D O		PM1-PM2-M2 O O M		PM1-PM2-M2 O D M		PM1-PM2-M2 D D M		TOTAL
		NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%	
MO.	U	1	16.6	0	0	0	0	3	50.0	0	0	2	33.3	6
0.3	L	6	27.2	1	4.5	2	9.1	8	36.3	3	13.6	2	9.1	22
0.6	U	0	0	0	0	1	6.6	4	26.6	4	26.6	6	40.0	15
	L	4	16.6	2	8.3	1	4.1	3	12.5	4	16.6	10	41.6	24
YR.	U	0	0	0	0	1	2.1	4	8.5	4	8.5	38	80.8	47
1	L	3	2.9	2	1.9	12	11.6	27	26.2	13	12.6	46	44.7	103
2	U					5	11.9	8	19.0	4	9.5	25	59.5	42
	L					9	8.7	14	13.5	13	12.6	67	65.0	103
3	U					1	2.7	9	25.0	3	8.3	23	63.8	36
	L			1	1.0	10	10.7	9	9.6	14	15.0	59	63.4	93
4	U					0	0	5	13.8	7	19.4	24	66.6	36
	L					1	1.6	3	4.9	4	6.5	53	86.8	61
5	U					0	0	4	16.6	2	8.3	18	75.0	24
	L					4	4.2	8	8.4	9	9.4	74	77.8	95
6	U					1	3.4	5	17.2	1	3.4	22	75.8	29
	L					3	6.3	1	2.1	3	6.3	40	85.1	47
7	U							2	11.1	2	11.1	14	77.7	18
	L							3	6.6	5	11.1	37	82.2	45
8	U							7	33.3	2	9.5	12	57.1	21
	L					3	6.9			3	6.9	37	86.0	43
9	U									1	25.0	3	75.0	4
	L											8	100.0	8
10	U											3	100.0	3
	L											13	100.0	13
11	U													0
	L					1	100							1
12	U							1	50.0			1	50.0	2
	L													

The percentage of teeth in each quadrant showing the O-D-M position is remarkably close, varying only 0.7 per cent for the four quadrants. The correlation in the D-D-M position is also high, varying only 2.7 per cent between the highest and the lowest percentages. The graphs were moved to the right

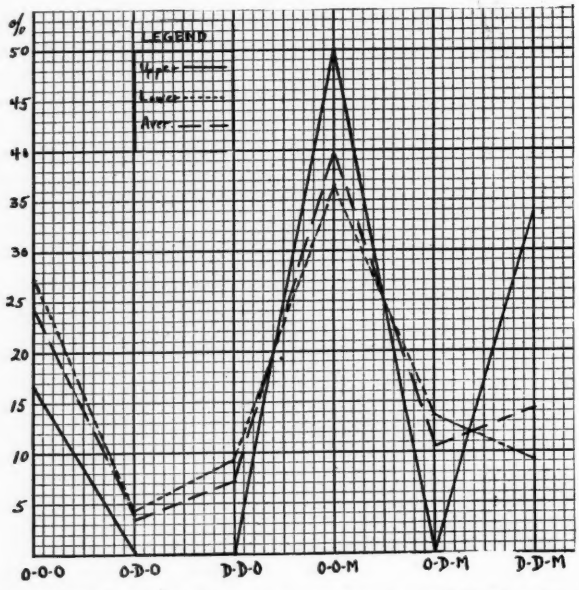

Fig. 8.—Percentage frequencies of positions by quadrants (PM1-PM2-M2) in maxillary and mandibular jaws and averages for both jaws at interval of three months.

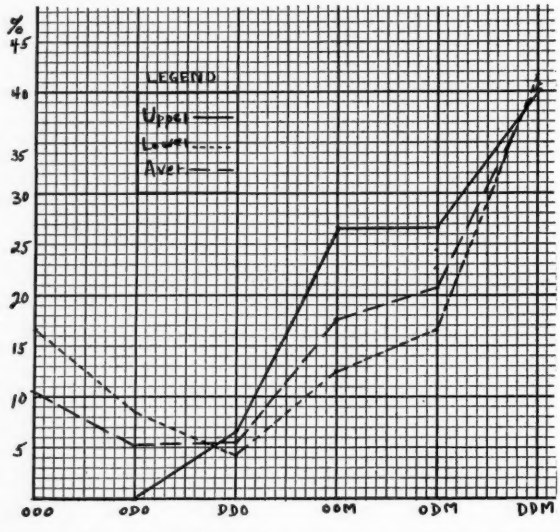

Fig. 9.—Percentage frequencies of positions by quadrants (PM1-PM2-M2) in maxillary and mandibular jaws and averages for both jaws at interval of six months.

for each of the quadrants, otherwise the correlation between maxillary right and maxillary left as well as that between mandibular right and mandibular left would appear even closer but would be difficult to distinguish.

Table VII shows the relative distribution of the 941 quadrants, separated according to their location in the maxilla and the mandible, distributed accord-

ing to their frequency of occurrence in the various designated positions and related to the interval between the age at extraction and the age when the impressions were taken.

Figs. 8 and 9 show the percentage frequency of distribution in the six designated positions of the quadrants in which the first molars had been lost three months and six months respectively before the impressions were taken. Since the O-O-M position shows the highest frequency of distribution at the end of three months, it seems to indicate that the molar, especially in the max-

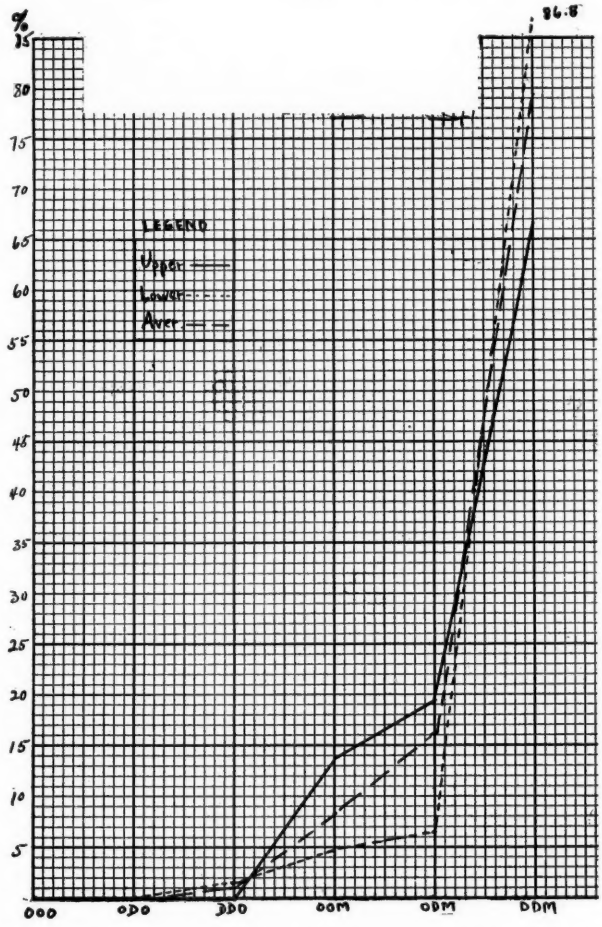

Fig. 10.—Percentage frequencies of positions by quadrants (PM1-PM2-M2) in maxillary and mandibular jaws and averages for both jaws at interval of four years.

illa, is the first to move mesially before the premolars move distally. The O-O-O position is also high at this interval, but more frequently seen in the mandible than in the maxilla. The D-D-M position ranges from 33.3 per cent in the maxilla to 9.1 per cent in the mandible, at the end of three months. The graphs for the group at the six-month interval show clearly the central tendency for the quadrants to go from the other five positions to the D-D-M position.

Figs. 10 and 11 show further evidence of the central tendency for the quadrants to assume the D-D-M position with the increase in interval between age at extraction and taking of impression. At the end of six years we find no

O-O-O or O-D-O quadrants. The D-D-O is higher for the mandible than for the maxilla, while the O-O-M is higher for the maxilla than for the mandible. The O-D-M position is relatively low, while 75.8 per cent of the maxillary and 85.1 per cent of the mandibular quadrants in the six year interval are in the D-D-M position.

Table VIII shows the distribution of intervals according to each of the six positions. Of those in the O-O-O position 50 per cent were examined at an interval of three months after extraction while only 0.6 per cent at three months after extraction were in the D-D-M position. The D-D-O showed a decided

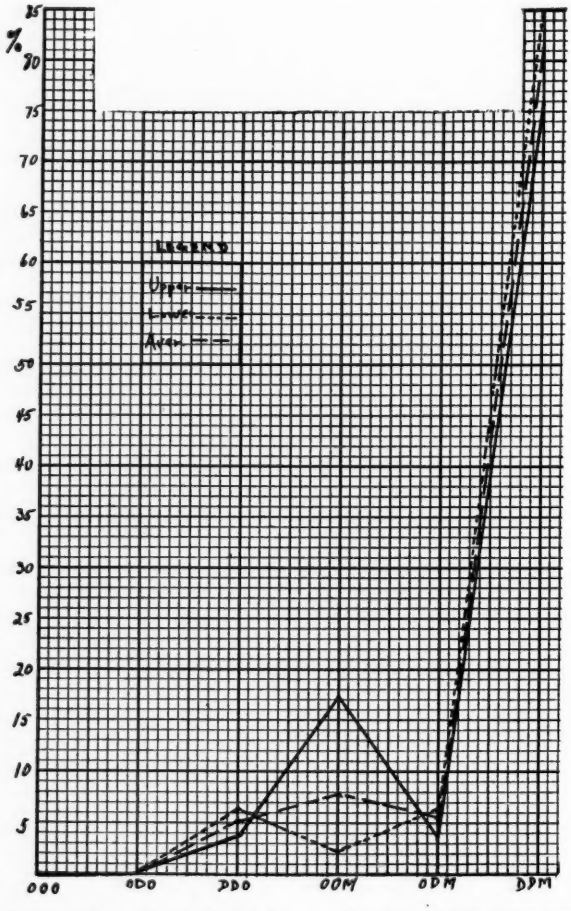

Fig. 11.—Percentage frequencies of positions by quadrants (PM1-PM2-M2) in maxillary and mandibular jaws and averages for both jaws at interval of six years.

decline after the third year. The O-O-M also dropped markedly after the third year. The O-D-M was fairly evenly distributed between one and three years and between four and five years. The D-D-M was quite evenly distributed between one and five years and decreased gradually between six and eight years.

The graph in Fig. 12 shows the percentage frequencies, according to interval after extraction, of each of the six positions. The frequencies increase in range of distribution according to the order of the different positions from O-O-O which disappears at the end of one year to D-D-M which starts at three months and continues to the twelfth year. The distribution of D-D-O and

TABLE VIII

NUMBER AND PERCENTAGE OF QUADRANTS (PM1-PM2-M2) IN EACH POSITION RELATED TO INTERVAL BETWEEN TIME OF EXTRACTION AND TIME WHEN IMPRESSION WAS TAKEN

		0.3	0.6	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
PM1-PM2-M2 O O O	No.	7	4	3												14
	%	50.0	28.5	21.5												
PM1-PM2-M2 O D O	No.	1	2	2		1										6
	%	16.6	33.3	33.3		16.6										
PM1-PM2-M2 D D O	No.	2	2	13	14	11	1	4	4		3			1		55
	%	3.6	3.6	23.6	25.4	20.0	1.8	7.2	7.2		5.4			1.8		
PM1-PM2-M2 O O M	No.	11	7	31	22	18	8	12	6	5	7				1	128
	%	10.1	5.4	24.1	17.1	14.0	6.0	9.0	4.6	3.9	5.4				0.75	
PM1-PM2-M2 O D M	No.	3	8	17	17	17	11	11	4	7	5	1				101
	%	2.9	7.9	16.8	16.8	16.8	10.8	10.8	3.8	6.9	4.9	0.9				
PM1-PM2-M2 D D M	No.	4	16	84	92	82	77	92	62	51	49	11	16		1	637
	%	0.6	2.5	13.2	14.4	12.9	12.1	14.5	9.7	9.0	7.7	1.8	2.5		0.2	

O-O-M positions shows a close correlation over the time interval range. At the end of three years there is a decided drop in the D-D-O and O-O-M quadrants. The O-D-O distribution is fairly short as far as intervals after extraction are concerned. The O-D-M shows a larger range. Its resemblance in interval distribution to D-D-M is marked. O-D-M, as is indicated by previous charts and graphs, is merely a substation on the way to D-D-M.

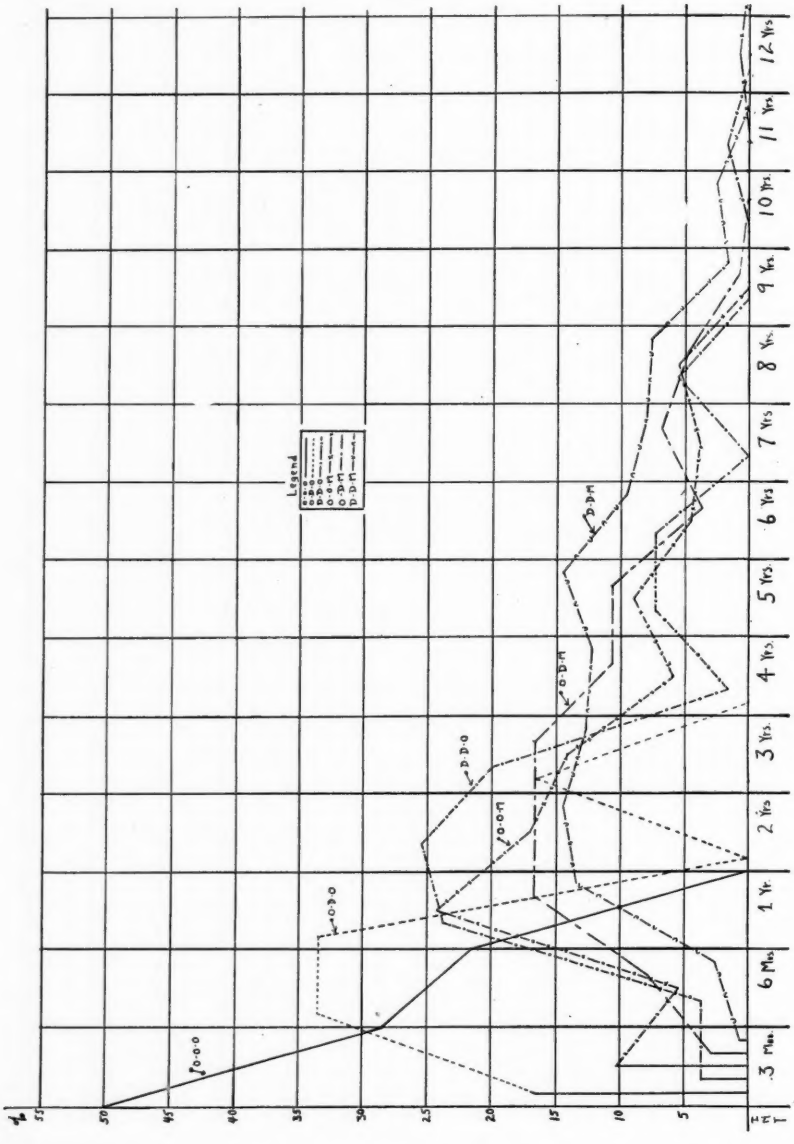

Fig. 12.—Percentage frequencies of positions of PM 1-PM2-M2 (by quadrants) related to interval between age of extraction and age at examination.

If we relate the space remaining between the second premolar and the second molar in each quadrant, according to stated intervals between the age at the time of extraction and the age when the impression was taken, we can then obtain the weighted median space remaining at each stated interval after the first molar was extracted.

Table IX shows the maxillary quadrants in stated intervals from three months to twelve years grouped according to the amount of space remaining

TABLE IX

QUADRANTS IN MAXILLA GROUPED ACCORDING TO AMOUNT OF SPACE LEFT BETWEEN PM2 AND M2 AFTER EXTRACTION OF FIRST MOLAR, AT VARIOUS INTERVALS FROM THREE MONTHS TO TWELVE YEARS BETWEEN TIME OF EXTRACTION AND TIME WHEN IMPRESSION WAS TAKEN

INTERVALS →	SPACE IN MM. 0	1	2	3	4	5	6	7	8	9	10	WEIGHTED MEDIAN SPACE	MED. MOVE.
3 mo.									2	3	1	8.83	2.2
6 mo.							4	7	2	3		7.3	1.5
1 yr.			5	8	8	8	5	7	2			4.7	2.6
2	3	4	5	8	5	6	2	5	3	1		4.0	0.7
3	10	2	5	5	8	3	2	3				2.8	1.2
4	8	7	7	6	4	4	1					2.2	0.6
5	11	3	5	2	3							1.3	0.9
6	13	7	2	3	2							0.93	0.4
7	7	6	4	2								0.7	0.2
8	12	6	3									0.6	0.1
9	2		2										
10		1											
11													
12													

between the second premolar and the second molar. The quadrants in each interval showing different amounts of space remaining were weighted, and the weighted median average space remaining was then obtained for each interval. If we accept 11 millimeters as the median mesiodistal measurement of maxillary first molars, we can obtain the median amount of movement at each interval by subtracting the weighted median space remaining at each interval from 11.

TABLE X

QUADRANTS IN MANDIBLE GROUPED ACCORDING TO AMOUNT OF SPACE LEFT BETWEEN PM2 AND M2 AFTER EXTRACTION OF FIRST MOLAR, AT VARIOUS INTERVALS FROM THREE MONTHS TO TWELVE YEARS BETWEEN TIME OF EXTRACTION AND TIME WHEN IMPRESSION WAS TAKEN

INTERVALS	SPACE IN MM. 0	1	2	3	4	5	6	7	8	9	10	11	WEIGHTED MEDIAN SPACE	MED. MOVE.
3 mo.							2		3	5	7	5	9.4	1.6
6 mo.							4	1	7	5	2	4	8.5	0.9
1 yr.	7		5	5	5	13	16	17	12	14	8	2	6.3	2.2
2	6	4	6	8	11	15	14	16	15	7	1		5.0	1.3
3	12	6	11	12	12	13	6	8	8	5	1		4.1	0.9
4	11	8	6	8	5	8	4	5	3	1	1		3.4	0.7
5	38	6	18	9	7	4	5	1	7				2.2	1.2
6	19	6	7	3	1	5	1	3					1.9	0.3
7	16	6	5	9	1	3	1		1				1.8	0.1
8	21	6	5	3	2	5	2	1					1.5	0.3
9	5	2											0.3	1.2
10	9	1	1										0.2	0.1
11		1												
12														

Table X shows correlation for the mandibular quadrants similar to that of the maxillary quadrants as shown in Table IX.

The graph in Fig. 13 shows the weighted median space in the maxillary and the mandibular quadrants related to stated intervals from three months to 12 years after extraction. The curves are parallel with the space remaining at each interval, being smaller in the maxillary than in the mandibular quadrants.

SUMMARY

1. Correlated according to the number of molars in each age group. As the age when each child was examined increased, the percentage of one and two molars lost in the respective age groups decreased. The contrary was true of the percentage of three molars lost, which increased with the rise in age at the time of examination from 15 to 18 years. The four molar percentage was fairly constant in the age groups from 15 to 18 years but increased at 18 to 19 years.

2. When correlated according to percentages showing 1, 2, 3 and 4 molars lost at the time of examination, the percentage frequency of distribution according to age at the time of examination, 15 to 19 years, was the same for the "one molar lost" group as for the "two molars lost" group. This type of correlation was true also of the three and four molars lost groups respectively.

3. When correlated to the *age when the first molars were lost,* we find the peak for the one molar group at age 13; the two molar group at 14 years; the three molar group also at 14 years and the four molar group at 15 years.

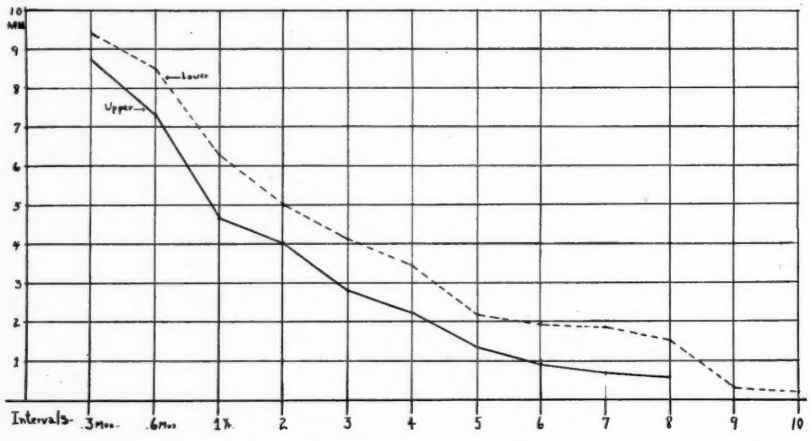

Fig. 13.—Distribution of median weighted space in maxillary and mandibular quadrants according to time intervals between extraction and impression.

4. The mandibular left first molar is most frequently lost. The mandibular right is second; the maxillary left, third and the maxillary right is fourth in order of decreasing frequency. What is the reason for this condition? Does it have anything to do with the side most frequently used for chewing? Is it related to right and left handedness? Why are the mandibular teeth more frequently lost? If the answer is that these teeth are the first permanent teeth to erupt, then the conditions present in the mouth of the child at that age should be better known to us. These questions have not as yet been satisfactorily answered. The average number of first molars lost is 1.88 per child examined.

5. At the time when the first and second premolars and the second molar in the 941 quadrants studied were examined, less than 1.5 per cent showed no movement (O-O-O position). Less than 1 per cent were in the O-D-O position. The percentage of D-D-O was greater in the mandibular than in the maxillary quadrants. The percentage of O-O-M positions was greater in the maxillary

than in the mandibular quadrants. From 66 to 68.8 per cent of all quadrants showed the D-D-M position. There was hardly any difference between the right and the left quadrants in each jaw.

6. (a) Fifty per cent of O-O-O were in the three-month interval group and 78 per cent within six months; none in O-O-O later than one year after extraction.

(b) O-D-O showed 84 per cent in the intervals within one year. None later than three years.

(c) D-D-O had 75 per cent at the three-year interval and none later than eight years.

(d) O-O-M had 71 per cent at the three-year interval and none after eight years.

(e) O-D-M showed higher percentages than D-D-M in the intervals up to three years but lower than D-D-M after three years.

(f) D-D-M was fairly evenly distributed between 1 and 8 years.

When the correlation of position of the first and second premolars and the second molar to the interval of time elapsed and first molar space remaining is made, we may be able to tell more accurately whether any of the positions other than D-D-M are present or whether they all are substations, as they seem at present, on the road to D-D-M. At present, we can say that after 9 years of age there were no cases in any position other than D-D-M. In other words, given sufficient time, premolars and second molars in jaw quadrants from which first molars had been lost will tend to show change of position. This provides the answer to those who would extract first molars with the thought that the second molars will move forward by themselves to occupy the space thus left, while the premolars stand still.

7. Weighted median correlation showed faster closure of space in maxillary than in mandibular quadrants in the intervals between 3 months to 10 years. There was a steady and definite decrease of space between the second premolar and the second molar as the interval between extraction and the taking of the impression increased.

8. The range of variance and the amount of space left between the second premolar and the second molar at each interval decreased as the interval after extraction increased. This seems to indicate that, while the space tends to get smaller, it does not necessarily close at the same rate in all cases. It is possible that other local factors are responsible for the persistence of the space for an undue length of time as well as for the rate of closure in all cases.

My thanks are due to Mr. Abel Rosenberg for his assistance in the preparation of the casts, charts, photography, and slides.

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DISCUSSION

Dr. Fred R. Blumenthal.—I want to congratulate the essayist on this highly praiseworthy piece of scientific research in the accumulating of such timely data for the orthodontic profession. Unfortunately, I have a slow working mind when it comes to following statistical charts on the screen, and a correlation of the data which he gave there will necessitate my giving it much more careful study in order that I may understand it fully. However, I was well able to grasp the points which he so beautifully stressed on the move-

ments of these various teeth causing malocclusion to be the inevitable result of such removal, and I shall certainly look forward to accepting the kind invitation which he so graciously gave all of us to come and see those hundreds of sets of models. I am sure we can all gather from them a great deal of knowledge to add to our own practical findings in orthodontics.

The extraction of teeth as an orthodontic procedure has been discussed for many years. Needless to say, it is nothing at all new. Dr. Angle in his book, which was published thirty years ago, in 1907, recognized the importance of this problem. He recognized the fact that each tooth is an important part of occlusion and that its loss should seriously be considered before deciding upon its removal. He stated that he had never seen a single case in which the loss of first permanent molars was not followed by malocclusion, often of a serious nature, and that the loss of no other tooth is followed by so many and so marked evil effects. (Mind you, this was thirty years ago.) He believed that the loss of the four first permanent molars frequently caused the shortening of both arches anterior to the spaces, thus robbing the face of its normal contours and producing an undeveloped, sunken appearance about the mouth. The removal of the four first permanent molars, the main support of the jaws, caused a shortening of the bite and arrested the normal lengthening of the face.

I believe that Angle was very sincere in his expression. I believe that he was very truthful when he said that never in his experience had he seen a case in which the loss of the first permanent molars did not cause a malocclusion. I would almost be willing to go on record with the same finding and say that at least in the greatest percentage of such cases, and far more than in the majority of such cases, in which there is a loss of the first permanent molars, do we find a malocclusion, which is sometimes and most frequently more serious than the original case. For instance, there is a type of case to which I must call your attention, and which I am sure you can all agree results from the loss of the first permanent molars. This has been mentioned by the essayist, and I could not add anything to what he has already said, for he has presented his work so beautifully, but I should like to show you some of my findings in these cases. With the loss of the first permanent molars at certain ages—and I believe the author's text will bear me out on this—there is migration of the premolars. (Illustrating on the blackboard.) Sometimes the migration is distally, and sometimes lingually. With the migration of the teeth into these open spaces, these premolars come up into this space, this one up into here, and this one in here, so there results a shortening of the face. There is a shortening of the vertical length, and the mandibular incisors then strike the soft gum tissues palatally to the maxillary incisors. Where does the serious part come in? Note that the child has not a perfectly good functional occlusion on it, but the mandibular anterior teeth invariably, in that type of deformity, elevate themselves and start to cut the palatal aspect of the soft tissue. The vertical development has been shortened, the mandibular anterior teeth come up into the soft tissue, and for the life of me I do not know how the orthodontist or the prosthodontist is going to correct that condition if it is allowed to go to the age of sixteen or seventeen years. If you reflect for a moment on the cases encountered by you in your own practice, I am sure you will remember many such in which the mandibular anterior teeth bite severely into the soft gum tissues palatally to the maxillary incisors, causing chronic inflammation of these tissues, and I am still here to learn just what to do for those cases without radical procedures. Here we see the correlation of the extraction of teeth not only from the orthodontic standpoint but from the standpoint of prosthetics and crown and bridge work which must follow for the good of our patients, and which must seriously be considered. We must not lose sight of the fact that it might be necessary to extract one or more first permanent molars because of extensive caries or pathologic condition. In this event the case should carefully be studied with the idea of compensating for the loss in some manner. Sometimes it is inadvisable to extract another molar in the same or opposite arch, but in all cases in which extraction is resorted to, the case must carefully be studied, giving full consideration to the possibilities of end-results.

McCoy has written beautifully on this subject. Dewey gave considerable thought to it. The INTERNATIONAL JOURNAL OF ORTHODONTIA has given great thought to it. Here is a

book which very few of you know about; it is not new but was published in 1927 and privately distributed, *Treatise on the Neglected Phase of Dentistry.* After I consulted this volume from my library, I could not refrain from marking off a couple of paragraphs, which I thought might be touched upon, on the advisability of extracting first permanent molars as an orthodontic procedure.

"For our purposes let us consider but one point in the matter of comparative anatomy, the dental arch for example. We find it is not so wide nor so extended as it was in former generations, and also that the teeth are not growing smaller with the decreasing arch. Consequently, in our day, the teeth are now more congested, predisposing them to irregularities and to early decay. It is this condition that has made the field of orthodontia possible, and has encouraged us to publish this volume which, we hope, contains sufficient instruction to arouse the interest of general practitioners to become efficient orthodontists. It is only necessary to establish some elementary facts, principles and procedures, in order that the dentist's own initiative and creative ability may master the requirements of these wonderful mechanical devices—the teeth.

"It is all too evident that orthodontia, as practiced today, is limited in scope. It is only the children of the wealthy that can receive this modern treatment, and the number of children requiring regulation of the teeth is on the increase, with the result that many are neglected.

"It is this problem that has prompted us to offer the profession a possible remedy for this most serious situation by suggesting and demonstrating a simple, efficient, and inexpensive method not yet fully understood by our colleges, and of which the public in general is quite likely ignorant.

"We feel that the judicious extraction in conformity with nature's law in evolutionary processes is the solution of the present crisis, for it not only permits easy correction but offers a form of preventive dentistry.

"To relieve the crowded conditions and to allow for the proper development of the wisdom teeth, or third molars, which should come into service at the age of eighteen, we suggest, in many cases, the extraction of the four first permanent molars between the ages of twelve and eighteen.

"Why the first molars? When they appear at the age of six, they, with the central incisors, establish the arch of the permanent teeth, and in this way they perform a helpful function, but for many generations the dental arch has been diminishing in size and too often it is not sufficient to accommodate all of the incoming teeth. The first molars are regarded by the profession—for no rules are general—as the weakest teeth in the mouth; therefore, they, with few exceptions, are the ones to remove when more room is needed, as at the age of twelve, four more molars will appear, adding an almost irresistible pressure upon the already crowded teeth within the arch."

In other words, that is what we, as scientific men, must combat in the study of orthodontics. How a publication of that type could have acquired so wide an influence on the thought of dentists relative to the extraction of teeth, I cannot quite understand, and after the presentation which was so beautifully given today I believe we must all agree that we cannot allow that thing to go on.

Recently Dr. Frank A. Delabarre of Boston served on a committee to correlate throughout the country from the Class A dental schools what their version on the extraction of teeth was, and in connection therewith sent out a poll to thirty-six or more dental schools. Thirty-six schools replied, and one hundred per cent of the replies were in the affirmative, and these schools went on record as being opposed to the extraction of the first molars as a proper procedure in orthodontic treatment. With that in mind, and in view of this presentation today, I think some positive action should be taken.

Dr. Willis H. Grinnell.—As Dr. Blumenthal has pointed out, we have had considerable difficulty in the city of Boston combating this wild idea or theory of extracting all the four first molars; so I am very glad that Dr. Salzmann has taken the time and the effort and the trouble to get these data. I do want to congratulate him on it, but I wish to point out also that he has only scratched the surface, a fact which he already knows. He has given

us the movement of only three teeth. As Dr. Blumenthal pointed out, other teeth are affected, particularly the closure of the bite and the formation of a malocclusion. I hope that Dr. Salzmann will continue. I think he has enough material there for ten years' work. I am very glad that Dr. Blumenthal brought this book so you may all see it. I think it is a crime that such a book was ever published.

Dr. Lowrie J. Porter.—I think this presentation has been very valuable for us, particularly after the discussion that we had last year in regard to space retainers.

I want to call your attention particularly to some work that Dr. Isador Hirschfeld has done in which he has shown the results of these cases in later years, an exposition which is very important to us and very important to the general dentist. Dr. Salzmann has shown quite definitely the drifting of the first molars. (Illustrating on the blackboard.) This is the maxillary first molar and this the mandibular first molar drifting forward. Dr. Hirschfeld has shown in his work that in later years there is a very definite resorption of the alveolar tissue adjacent to these teeth, causing destruction of this tissue, so there is a loss of bone structure where this tipping occurs. Dr. Hirschfeld claims that it is one of the very definite problems of the periodontist to cure this condition, and that as long as those teeth remain tipped, there will be a loss of tissue and bone structure, and will eventually in most cases cause the loss of other teeth after one tooth has originally been lost.

I think that this is a very definite problem for us to educate the general dentists on, and to show them that the result of the loss of one of these teeth eventually means the loss of more teeth for the patient.

Dr. Raymond L. Webster.—As I am told that a program for education of the public on orthodontics is now under way, I believe that in this particular connection not only should the public be advised of the value of orthodontia, but it is up to us to see to it that even before they get to the orthodontist the general practitioner does not get us into just the trouble we have seen here today. I believe the educational part of this work should be gone into with the general practitioner even before the public is educated as to the value of orthodontic treatment. The men we have to work with are the general men who are doing just these things before the problem comes to us, and they must know why they should not perform such extractions.

Dr. J. A. Salzmann.—I simply want to say that the things that Dr. Blumenthal mentioned are among those that I expect to study in the near future. As far as Libby's book is concerned, I do not think I need go into that any further. I have shown where at least these cases would seem to contradict the assertions made in that book. I wish to thank Dr. Blumenthal for what he has said.

I also wish to thank Dr. Grinnell for his discussion. As far as these other movements mentioned by Dr. Grinnell are concerned, they will be studied and the results presented from time to time at a later date.

I also wish to thank Dr. Porter for the point he made on tissue destruction. Histologic studies will also follow later.

I also wish to thank Dr. Webster, and to say that I, too, feel that education is necessary. I do not want to take any more time to go into that phase of the matter, for I could speak a long, long time about it. I think if we, ourselves, feel that what we are doing is worth anything at all, certainly it is part of our job to tell the general dentist about it, and then the public.

THE BEHAVIOR OF ARCH WIRES IN FIXED ATTACHMENTS

ALEXANDER SVED, NEW YORK, N. Y.

THE latest developments in orthodontic appliances involve the use of bands with special attachments to receive an elastic metal arch. Tooth movement is brought about either by a gradual change of the passively adjusted arch toward the normal, or by firmly locking into the attachments an arch wire which has been bent into its ideal form. The locking into the attachments causes a deformation of the elastic arch, and internal stresses develop within it. The stresses set up within the wire gradually diminish as tooth movements take place, and finally a point is reached where tooth movement ceases and the arch rests passively in its attachments.

Thus it is made clear at once that the forces which become effective in producing tooth movements originate solely with the orthodontist. By finger pressure, or by means of suitable instruments, the orthodontist causes a primary deformation of the appliance, which when locked into its attachments and prevented from regaining its original shape, delivers forces to the teeth. In causing a deformation of the appliance the orthodontist performs "mechanical work" on the wire. This mechanical work is stored in the elastic metal arch as "potential energy," and it is regained as useful work during tooth movement. Since the work done by the wire upon the teeth must be equal to the work done by the orthodontist on the wire, it becomes necessary to analyze the behavior of metal arches in the various attachments.

The behavior of the arch wire is governed by the following conditions:

1. The kind of attachment used.
2. The physical properties of the material.
3. The shape of the wire.
4. The size of the wire.
5. The distances between attachments.

ATTACHMENTS

Everything else being the same, the kind of attachment used determines the intensity of force which can be delivered to the teeth by a wire of given size and shape. The influence of the attachment is governed by its degree of fixation. The greater the degree of fixation the greater the force which may come upon the teeth from a given wire. The commonly used attachments have different degrees of fixation. The edgewise arch bracket allows the greatest freedom to the arch wire, which may slide either mesially or distally in the bracket, and may also move a limited amount labially or buccally on account of the give in the ligatures. Rotation of the arch wire in the attachment is prevented by the rectangular slot. The ribbon arch bracket is similar to the edge-

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wise arch bracket, but the attachment is more rigid due to the tiny spikes which hold the arch wire firmly in the brackets. Its degree of fixation is greater than that of the edgewise arch bracket. In the pin and tube attachment the arch wire has no freedom of movement in relation to the tube, except that of rotation about the pin. Even this rotation is prevented when small half-round pins and tubes are used. In that case the fixation is complete. Similarly, the Griffin attachment and the Russell lock represent the type of attachment in which the fixation is complete. It will be shown later that the last three forms of attachments are the most dangerous to use.

PHYSICAL PROPERTIES

The intensity of force capable of being delivered by a wire of given shape and size depends also upon the physical properties of the material of which the wire is made. While it is not practical to enter into a detailed discussion of this phase of the subject, it must be noted that the proportional limit and the modulus of elasticity of the material must be known in order to determine the fitness of a wire for orthodontic purposes.

The shape of the wire is an important factor. The ability to resist bending influences depends upon the distribution of the material within the body of the wire. The same amount of material may be differently distributed. A wire of circular cross-section does not offer as much resistance to bending as a wire of square or rectangular cross-section, even though the section area is the same. A rectangular wire resists bending stresses more effectively parallel to its long side than to its short side. Thus, the ribbon arch offers greater resistance gingivo-occlusally, while in the edgewise arch the greater resistance is in the buccolingual direction.

The size of the wire is another factor which must be taken into consideration. In this connection it must be stated that the resistance to bending is not directly proportional to the dimensions of the wire, but it varies as the third power of the diameter. In other words, if the diameter is doubled, the resistance to bending is increased 8 times. If the diameter is tripled, the resistance increases 27 times. In the case of rectangular wires this relationship is somewhat different.

The distances between attachments determine the ability of a wire to resist bending stresses in an inverse ratio. The greater the distance between attachments, the less the resistance to bending. Thus, the same wire has one-half the stiffness in a double length span. From this it follows that in the ribbon arch and in the edgewise arch brackets, the metal arch exhibits the greatest stiffness between the mandibular anterior teeth, with corresponding greater reactions.

The elastic arch wire, as used in orthodontia, is a statically indeterminate structure. The three laws of static equilibrium, which are commonly employed in the solution of ordinary engineering problems, fail to give sufficient conditions to find the reactions of the arch wire. The multiplicity of attachments would make all calculations too laborious, even though all the necessary conditions were given. By means of a novel method, recently devised by Professor R. C. Brumfield of Cooper Union, the reactions of a wire with multiple supports under any

conditions of loading can be calculated. While this method is also too laborious for inclusion here, the difficulties which arise in connection with statically indeterminate problems disappear with its use. Under the guidance of Professor Brumfield, I was able to calculate the reactions of a 0.022 in. × 0.028 in. rectangular arch wire, with supports placed at approximately the same distances apart as the edgewise arch brackets are placed in an average upper jaw. The supports were assumed to allow free rotation with the exception of the end supports, which correspond to the rectangular buccal tubes on the first molars. These were assumed to be fixed. It is clear that this does not represent the conditions in any of the commonly used attachments. In every one of these attachments the supports are fixed, for they have a firm hold on the arch wire. The figures obtained are the minimum reactions of

REACTIONS OF TEETH IN POUNDS, CAUSED BY $\frac{1}{100}$ INCH DISPLACEMENT OF WIRE .022 × .028

DISPLACEMENT AT ↓	RIGHT FIRST MOLAR	RIGHT SECOND PREMOLAR	RIGHT FIRST PREMOLAR	RIGHT CANINE	RIGHT LATERAL	RIGHT CENTRAL	LEFT CENTRAL	LEFT LATERAL	LEFT CANINE	LEFT FIRST PREMOLAR	LEFT SECOND PREMOLAR	LEFT FIRST MOLAR
RIGHT FIRST MOLAR	.7246	1.1961	.5597	.1128	.0308	.0077	.0020	.0006	.0001	0	0	0
RIGHT SECOND PREMOLAR	1.2008	2.4632	1.7298	0.5925	.1582	.0408	.0100	.0029	.0008	.0003	.0001	0
RIGHT FIRST PREMOLAR	.5644	1.7380	1.9975	1.1954	.4699	.1200	.0270	.0073	.0024	.0007	.0002	0
RIGHT CANINE	.1122	.5896	1.1934	1.4016	1.0166	.4089	.1022	.0307	.0081	.0024	.0009	.0002
RIGHT LATERAL	.0299	.1575	.4700	1.0169	1.3349	.9483	.3768	.1127	.0304	.0091	.0031	.0006
RIGHT CENTRAL	.0077	.0404	.1208	.4083	.9458	1.1749	.8470	.3771	.1002	.0286	.0098	.0020
LEFT CENTRAL	.0020	.0098	.0286	.1002	.3771	.8470	1.1749	.9458	.4083	.1208	.0404	.0077
LEFT LATERAL	.0006	.0031	.0091	.0304	.1127	.3768	.9483	1.3349	1.0169	.4700	.1575	.0299
LEFT CANINE	.0002	.0009	.0024	.0081	.0307	.1022	.4089	1.0166	1.4016	1.1934	.5896	.1122
LEFT FIRST PREMOLAR	0	.0002	.0007	.0024	.0073	.0270	.1200	.4699	1.1954	1.9975	1.7380	.5644
LEFT SECOND PREMOLAR	0	.0001	.0003	.0008	.0029	.0100	.0408	.1582	.5925	1.7298	2.4632	1.2008
LEFT FIRST MOLAR	0	0	0	.0001	.0006	.0020	.0077	.0308	.1128	.5597	1.1961	.7246

RELATIVE REACTIONS OF DIFFERENT SIZE WIRES

SIZE IN THOUSANDS OF AN INCH →	22×28 ■	28×22 ▮	22 •	20 •	18 •	16 •
RATIO	1.00	1.73	.46	.32	.21	.13

Occlusal

Gingival

Fig. 1.

a wire having maximum freedom. The reactions in the attachments would be several times greater. It was further assumed that the wire rested passively on all supports, and in order to produce a loading, one support was displaced 1/100 of an inch upward (gingivally). The deformation caused by such displacement develops internal stresses in the wire from which the reactions can be calculated. In a similar manner, one after the other, every one of the supports were displaced 1/100 of an inch and a separate calculation was made for the corresponding conditions. The results of these calculations were tabulated (Fig. 1), and the values given in the table disclose that a wire in fixed attachments must deliver tremendous forces to the teeth. It must be borne in mind that these values represent the minimum reactions when only one tooth is displaced. If the displacement is greater than 1/100 of an inch, the reactions become proportionately

greater, and if 2, 3 or 4 teeth are displaced, then the corresponding values here given must be algebraically added and with proper selection of tooth combinations may be much greater.

From Fig. 1 it appears that the reactions at the supports change in direction. If a tooth is displaced gingivally, then the reaction on the wire at that point is in the gingival direction; at the adjoining supports it is occlusally directed.

While this table gives the forces delivered to the teeth only in the vertical direction, other stresses are set up in the wire when it is locked into its attachments. The wire is also stressed in the buccolingual direction, and torsional stresses are brought into play. The buccolingual reactions are 1.73 times as great as the gingivo-occlusal reactions, because the wire possesses greater stiffness buccolingually. These must be properly accounted for, and together they make up the total force which comes upon the teeth.

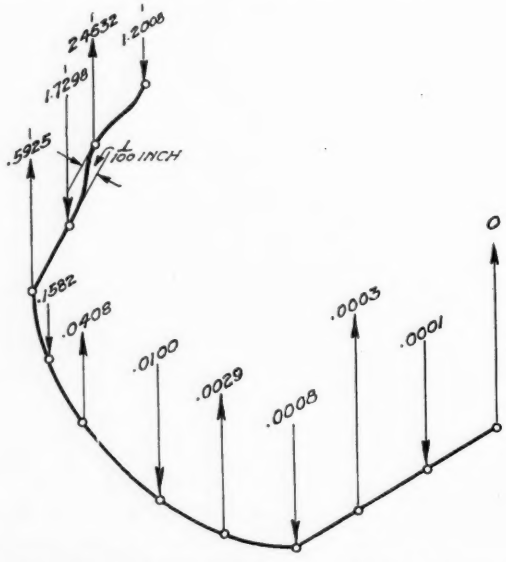

Fig. 2.—One-hundredth inch displacement at right second premolar.

At the lower left edge of Fig. 1, the relative reactions of different size wires are given. A 0.016 inch round wire produces only 0.13 the intensity of force produced by an 0.022 × 0.028 inch wire. To illustrate the difference in the reactions between free and fixed supports it has been calculated that when the first premolar is displaced 1/100 inch, the reaction on that tooth is 1.9975 pounds with free supports and 5.22 pounds with fixed supports.

In order to demonstrate that the reactions given in the table were correctly calculated, an instrument was designed by Professor Brumfield, which will be shown in the afternoon clinic. I wish to express my sincerest thanks to Professor Brumfield for his guidance and for checking the calculations.

In closing, I shall repeat that the work done by the wire on the teeth is equal to the mechanical work done by the orthodontist on the wire. It shall ever be so, and this places upon us a grave responsibility.

AN EXPERIMENTAL CHECK ON EDGEWISE ARCH COMPUTATIONS

R. C. Brumfield,* New York, N. Y.

I WAS asked to give a table clinic at the 1936 Fall Meeting of the New York State Society of Orthodontists. This clinic was designed to illustrate in a mechanical way the facts and figures which were presented to the Society at the regular meeting by Dr. Alexander Sved of New York City, on the forces exerted upon the teeth by the edgewise arch appliance. The following subject matter

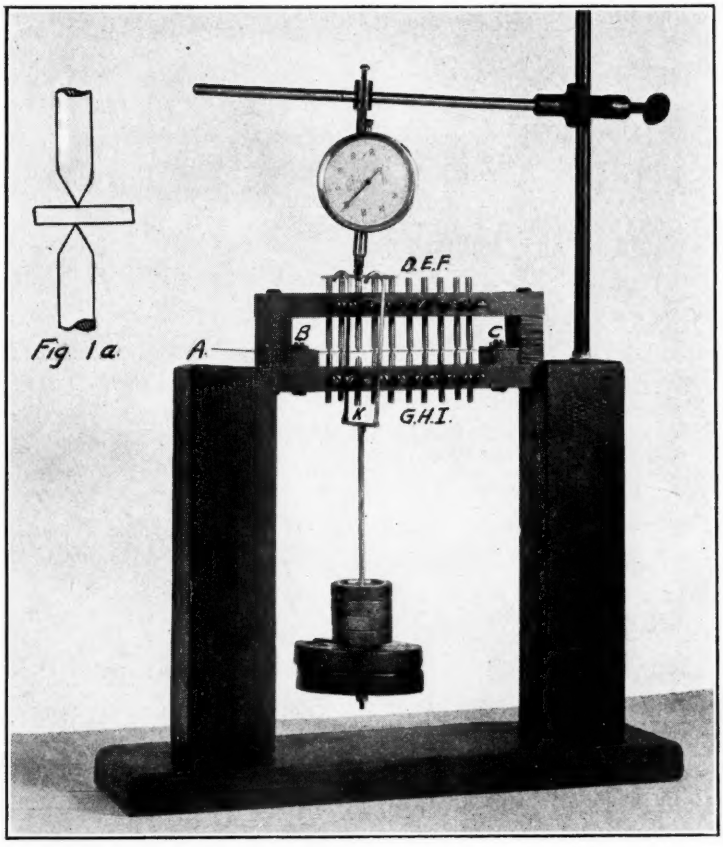

Fig. 1.

describes the apparatus used for the clinic and states briefly the correlation between Dr. Sved's theoretical figures and the results from the mechanical appliance.

Dr. Sved's figures were based on a continuous arch wire with supports spaced at intervals as determined from typical measurements between centers of teeth on a specific case in his office. The spacings of these teeth from center to center are given in his paper. The arch wire was computed as if it were

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Clinic given before the New York Society of Orthodontists, Nov. 23, 1936.

straight instead of curved as it exists in the mouth. This assumption simplifies computations and makes no appreciable error in results except at the teeth near the sharply curved part of the arch.

The apparatus shown in Fig. 1 was designed to duplicate mechanically, as nearly as possible, the exact conditions upon which Dr. Sved's figures were based. The edgewise arch wire which is shown at A was 0.022 in. × 0.028 in. with the 0.022 in. dimension vertical. This wire was made from a high grade gold platinum alloy and was used in the heat hardened state. The wire is rigidly clamped, at its two outer ends, to relatively massive blocks at B and C. These blocks represent the two anchor teeth, and their distance apart is exactly the the same as the measured curved distance between anchor teeth attachments on the typical arch. The intermediate teeth between these two points are represented in the device, Fig. 1, by the adjustable pins D, E, F, etc., above, and G, H, I, below.

These pins are spaced unevenly at exactly the measured distances between the intermediate tooth centers on the typical case. The ends of the pins, which make contact with the arch wire, are ground to knife edges, as shown to a large scale in Fig. 1*a*.

The lower pins G, H, I were adjusted until the wire lay passively on them, and the upper pins D, E, F were then brought down until the knife edges made contact with the wire.

It is readily seen that this type of support allows freedom of rotation but no vertical movement of the arch wire. This was an assumption in Dr. Sved's computations.

In order to measure the force required at one of these supports to put a definite deflection in the arch wire the lower pin at K is dropped down far enough to be clear of the arch wire as shown in the figure.

A loading device is then hung on the upper pin, and its clamp screw is released so that the full load comes upon it. The hole in which the pin slides is free from friction. The Ames dial directly above the upper pin measures the amount of deflection due to the load. The load is increased until the dial, which measures 1/1000 in. units, shows 1/100 in. of deflection.

This total load should then check the computed load shown in Dr. Sved's tables for the tooth represented by the particular support at which the load was placed, since his figures were all based on 1/100 in. misalignment of the tooth.

In all cases the experimental loads were found to check the figures in the table excepting at the two supports adjacent to the ends, which represent the two teeth adjacent to the anchor teeth. The loads developed at these supports were somewhat less than those Dr. Sved's table gives. The discrepancy at these two points is explained by the fact the arch wire was only clamped at the supports B and C and was not soldered. The clamping was not completely effective in preventing rotation. This rotation, slight though it was, produced a measurable effect at the adjacent supports. This effect was not detectable, however, at points beyond these first adjacent supports.

On the whole, the mechanical check was a remarkable corroboration of the accuracy of Dr. Sved's figures and should leave no room for lack of confidence in them.

REPORT OF COMMITTEE ON SOCIO-ECONOMICS

AMERICAN SOCIETY OF ORTHODONTISTS

First, let us fully comprehend the subject under discussion. Socio-economics may be defined as adjusting or distributing wealth to satisfy human needs. Since orthodontic organizations cannot do anything toward the distribution of wealth, our problem is one of satisfying the human needs for orthodontic services to fit the variable per capita wealth of the people.

Under the old order this was regulated mostly by the more natural laws of supply and demand. With the financial structure of the country in a collapsed condition in 1932 and a political revolution as the result, we are now faced with a more complex form of socio-economics; for powerful social and political groups are attempting to assume control of medicine and dentistry. Thus we have for our main discussion socialized medicine. Medicine incidentally includes the professions of dentistry, nursing and pharmacy. Let us briefly review the trend of political socio-economics so as to develop an awareness of the social and economic situation in which we find ourselves and where it may lead.

Individualistic Doctrine.—We see the passing of the individualistic doctrine which calls for as little government interference as is consistent with the public welfare. It holds to the theory that individuals and business will flourish best when restrictions imposed by law are few in number.

The Socialistic Doctrine.—The word "socialist" is used in this discussion not in the sense of describing a political party, but to mean the direct opposite of the individualistic doctrine. Instead of holding to the belief that the state should do as little as possible, the socialists urge state action in all fields of endeavor. They are not to be satisfied with a maze of regulatory devices, but insist that the state shall actually engage in all sorts of enterprises both economic and social.

The Doctrine of General Welfare.—Between the two extremes of individualism and socialism is still another theory, one which in a sense is a compromise between the two. This view is that the state should do those things which the general welfare of the people demands it should do, but that in the field of actual enterprise it should engage only in those businesses or industries which it can conduct more effectively and economically to all concerned than private interest can.

Communism is a modified form of socialism and ordinarily it implies an equal division of wealth regardless of services rendered and an equal distribution of the products of industry to all the people.

These statements, to be sure, do not clarify the situation, for immediately questions arise as to what is demanded for general welfare and just what enterprises can be more efficiently and economically operated by political than by private interests. The answers to our social and economic problems are trying to be solved by these conflicting philosophies.

Outside the field of actual ownership and operation, the question arises how far the government should go in determining the living conditions of the individual through regulation and taxation. In recent years there has been a rapid pyramiding of federal activities of a revolutionary character affecting different business and professional enterprises.

The government, at the present time, is rapidly expanding its secondary or optional functions. Among these may be mentioned the regulation of trade and industry, the care of the poor and needy, the protection of public health, the safeguarding of public morals, and the regulation of labor. In these the state can prohibit certain action in the public interest and can command action as well. Not only can it prohibit the individual from interfering with public health, but it can raise money through taxation to conserve public health.

Presented at the Thirty-Fifth Annual Meeting, Chicago, April, 1937.

In the past the great mass of the work done by the state in connection with its secondary or optional functions was done through regulation, only a small part being done by direct supervision and financial management. The sum total of the influence being exerted by the state is being done in three general ways: by regulation, by financial aid, and by direct management.

Naturally the question arises: what do all these governmental philosophies mean to dentistry and the specialty of orthodontia? To this the answer is simple: it has everything to do with it. It is in this political structure that dentistry must live and meet its public obligations and at the same time preserve its self-respect under a merit system of personal liberty.

This leads us face to face with the problem of socialized medicine and dentistry, which is one of the by-products of the New Deal political doctrine. This European method of providing medical care under compulsory and voluntary insurance was first sponsored in the United States by the Social Security League of New York. An elaborate system of health insurance was an integral part of the Social Security Act referred to as the "Epstein Bill" drafted by Prof. Herman A. Gray of New York University.

This bill was reviewed by your committee chairman about three years ago while serving on the public health division of a state public welfare committee. When this bill was revised for introduction in Congress in 1935, the health insurance system was eliminated. One of the principal reasons was that the officers of the American Medical Association and the American Dental Association presented very convincing evidence that it was impracticable and undesirable even though the morale of the professions was so low at the time that a very large percentage were about willing to try anything. It was modified to provide a broad public health service under Federal direction in combination with old age pensions and unemployment insurance by government subsidy.

It seems that the Social Security League, some time back, decided to change the name to that of the American Association of Social Security to prevent the organization from becoming confused with the Liberty League. Senator Capper is sponsoring their Federal Health Insurance Bill in the U. S. Senate. The Social Security Board is studying various plans of health insurance. It has been publicly announced and it is a matter of record that the American Federation of Labor has requested the President to provide a health insurance system. Last January, President Roosevelt startled Congress by requesting a reorganization involving two new cabinet portfolios, one to be a secretary of Public Welfare (the medical profession sensed this as being a step toward socialized medicine). It is generally conceded that if the President indorses a health insurance measure as the third leg of Social Security, its chances for passing Congress are practically assured.

The introduction of Senate Bill 855, by Senator Capper, entitled "To Aid in Alleviating the Loss Caused by Sickness," places the issue squarely before us and challenges the honest convictions of the professions on which it must depend for administration.

The fallacy of the proposed system is best determined by its contents. The financial theory upon which it is founded is incapable of providing the services it is supposed to guarantee the beneficiaries. The annual amount expended for sickness in the U. S. is estimated at $3,600,000,000.00, and it is calculated to administer this service through a bureaucratic insurance system at an estimated cost of 6 per cent of the workers' salary, representing $6,000,000,000.00 capital, one-fourth to be financed by the cooperative states and the other three-fourths between employers and employees. It makes no allowance for the thousands who will acquire psychoneurosis for convenience or become malingerers to gain disability benefits at 50 per cent of/or less than $15 per week on more than $25 of the regular salary for one hundred and fifty-six cumulated days. Additional benefits are allowed dependents. Cash maternity benefits are provided. These cash benefits are wholly speculative in the nation's annual sick bill used for the estimated cost.

Disability or health and accident insurance is recognized and conceded by insurance companies as being one of the most risky and speculative lines of insurance. This insurance, by its very character, covers not only the ordinary disabilities but also mental disability as reflected by mass consciousness dictated in many devious ways to those holding policies. May

I illustrate: it becomes easy for the unscrupulous to acquire an injury or an imaginary illness and fall back on insurance in order to avoid work. So will it be under state-federal health insurance, augmented with the personal right of selection to obtain support for disability benefits. Political corruption for personal gain would run rampant. Thousands of unworthy and irresponsible individuals would take advantage of their health insurance allowances to go tramping around and take the limit looking for a better job and a more enjoyable place to live.

Nearly all the old line, legal reserve insurance companies have discontinued 10 per cent disability benefits in the last several years. One large insurance company, writing noncancelable one, two and three months' elimination disability insurance, could not raise their rates fast enough to prevent bankruptcy during the years of the depression on account of so many getting sick for convenience to collect benefits.

In times of vast unemployment, revenue would be seriously curtailed and epidemics allowed to run rampant without sufficient funds to meet obligations unless it was met with special appropriations and extra taxation.

Federal Health Insurance with all its ramifications would be a regular political football to kick around every time Congress or a state legislature convened. It would be so unstable that the insuree could not be guaranteed any definite protection, due to a constant flow of changes in regulations by legislative bodies and governing boards.

We will agree that insurance, like many other of life's utilities, is a great thing if properly utilized, but when it misses the mark for which it was intended it becomes an economic waste. The public is insurance conscious, but the public is not conscious of the difference between the kinds of health insurance that are good and bad for them. We might go a step farther and say that the politicians in the countries in which this system has been established have not been capable of determining the kind of insurance the rank and file should have to serve their physical and financial well-being in a safe, sound and equitable manner.

An incalculable amount of dental service is provided, "exodontia, plastic fillings and prophylactic treatment and care with such other treatment and care, including restorative work, as may be found necessary to correct conditions which are prejudicial to health or are threatening to cause disability or are interfering or threatening to interfere with the pursuit of a gainful occupation." This was undoubtedly phrased with the intentions of providing complete dental care, as it might even be interpreted to include orthodontia. The intangible amount of dental work alone to be provided for the asking would in itself cause a financial breakdown. Certain unbiased insurance actuaries estimate that the spontaneous demand for health service which ordinarily goes without professional attention would boost the cost to 25 per cent or 30 per cent instead of the 6 per cent estimated.

An investigation by a Royal Commission in England in 1925 recommended the extension of the insurance service to complete dental service, but after an examination had been made it was concluded that *to do so would exhaust* the resources of even the British Treasury. There are not enough dentists in the United States to render this service when made available for the asking. It would therefore be a natural sequence for the dental technicians to demand a place to render service in prophylaxis and prosthetics and create a dual standard for dentistry as other European countries have experienced. There is evidence that a movement is already under way leading toward the unionization of dental technicians.

Farm laborers and those employed in personal or domestic service, up to three for one employer, are denied admittance. This seems to be an unfair discrimination, as these workers are among those who find it most difficult to purchase medical and dental services. The reason they are denied care is obviously due to the fact that several million farmers and servants are out of range of the tax collector.

The following modes are provided for remuneration of physicians and dentists in general practice.

"1. A salary system.

"2. A per capita system whereunder payment will be based on the number of persons entitled to medical benefits included in the practitioner's list.

"3. A fee system whereunder payment will be based on the extent and character of the treatment given and services rendered by the practitioner to persons entitled to medical benefits; and

"4. Any combination or modification of the systems herein stipulated."

The entire system is under political control. All the voice the professions of pharmacy, nursing, medicine and dentistry would have in the management of the system is the privilege of having three members serve on a national advisory board with three members representing employers, three for employees, and three for the public, making a twelve-member board.

The one-fourth cost imposed upon the state treasury would place another great tax burden on the entire commonwealth, in which the professions would share. These increased taxes, with a subsequently low fee and salary scale forced upon the profession as a part of necessity in the government's strenuous efforts to supply the services guaranteed under the law would make economic slaves out of 90 per cent of the profession. It would likewise demoralize the educational structure of medicine, dentistry, nursing, and pharmacy, as the incentive of profit out of practice would be destroyed. This in turn would force these professional schools and their students to become government subsidies. Even though orthodontia services are not provided, it would pull the specialty down to the same social and economic level of general dentistry. Until this monkey is taken off the backs of the professions of medicine further progress will be stalemated because of the uncertain future.

The greatest price the professions would have to pay is the loss of personal liberty in the pursuit of happiness as was intended in the Bill of Civil Rights.

The Social Security Act. We recommend for your perusal and study Supplement No. 126 outlining the Public Health Program under title VI of the Social Security Act. Authority is granted "for (1) an annual appropriation not to exceed $8,000,000.00 for the purpose of assisting states, counties and health districts and other political subdivisions of the states in the establishment and maintenance of adequate health services, including the training of personnel for states and local health work. (2) An annual appropriation of not to exceed $2,000,000.00 to the Public Health Service for research activities of the service and for the expense of cooperation with the states in the administration of the Federal funds granted for aid in the establishment and maintenance of state and local health services."

All official state health agencies qualifying under the provisions of the Act are and will receive grants for "(a) strengthening state and territorial health departments or bureaus or divisions of such departments, and provide adequate facilities especially for promotion and administrative guidance of district, county and city health services. (b) The training of personnel employed, or to be employed, in state and local health departments."

As examples of specific dental purposes for which the Federal funds may be used by state health authorities, the following may be mentioned:

(1) Additional technical and administrative personnel.

(2) Additional special facilities for control of cancer, tuberculosis, malaria, and other diseases such as Vincent's, which may be regarded as special health problems.

(3) Addition of special activities in fields such as industrial hygiene, mental hygiene, public health nursing, public health education and nutrition, all of which have a direct bearing on dental health.

(4) Addition of public health laboratory facilities, which undoubtedly offer opportunities for aid in the diagnosis of malignancy and such transmissible infections of the mouth as syphilis, tuberculosis, and Vincent's disease

(5) Strengthening divisions of public health engineering in the promotion of environmental sanitation, including the water supplies, and sanitary control of milk production. Provisions are offered for the correction of faulty water supplies—the chemical contents of which are of vital importance in the development of teeth. Those areas suffering from mottled teeth may find relief through this service by applying to their State Health Department.

(6) Purchase of serums and vaccines for immunization and drugs for treatment of venereal diseases.

(7) Purchase of other supplies and additional equipment. This makes it possible to provide mobile inspection, educational and laboratory units.

The programs of local health departments are expected to include the following activities:

"(1) Communicable disease control, including home visits to cases, immunization, maintenance of diagnostic clinics for tuberculosis, and facilities for treatment of venereal disease among the indigent.

"(2) Maternity service, including home visits to expectant mothers and the maintenance of maternity clinics for the poor.

"(3) Infant and preschool health service, including the maintenance of clinics for examination and advice on the care of infants.

"(4) School hygiene, including inspection and examination of school children, dental health work, and health education.

"(5) Diagnostic laboratory service for communicable diseases.

"(6) Public Health education, including home conferences, public lectures, newspaper articles, moving pictures, literature, exhibits and instruction in schools."

A general improvement in the dental health status of both children and adults may be expected in relative proportion to the uplifting influence this system will be able to administer.

Other important services available are the making of special surveys of state and local health organizations, with a view to appraising existing facilities and practices and the recommendations of improvements which may be indicated. Requests for local surveys of this kind should be made through state health authorities.

Special provisions are made for clinical research to aid in the solution of some of our most outstanding and perplexing health conditions. The dental profession should take cognizance of this service as an aid in solving some of the important dental health problems.

The program is primarily of an educational character. The educational program is supplemented with emergency curative services for the indigent and facilities for promoting a cooperative unified system of public health service. In this connection it should be pointed out that Josephine Roche, assistant secretary of the treasury, reported on April 7th the employment of 2,100 physicians, nurses and sanitary experts, the first year under the Social Security Act. They were divided as follows: more than 1,000 additional public health nurses; more than 600 additional doctors; and nearly 500 additional experts. Few reports came to our notice on the additional number employed in the CCC, WPA, and other relief organizations. However, in two eastern states alone about 125 dentists were working either part or full time under the WPA setup. They are paid $1.59 per hour for 15 hours a week, which is about the same rate commanded by skilled labor organizations. One hundred and sixty-eight dentists were recently authorized positions in the CCC. The dental divisions of the different state health departments in submitting their plans and budget for Federal grants have met requests for the establishment of clinical service. It is, therefore, logical to become skeptical of the outcome of this strong combination. Every one employed in this special service, out of the ranks of the medical profession, is a government emissary calling for the support of governmental programs, which may lead to a regimentation of almost the entire profession.

This official public health program commands the attention of organized dentistry if it is to fulfill its public obligations in the general scheme of things. As a result of this legislation a number of states have established divisions of dental health education in the state departments of health, and others will follow.

With such an extensive educational and remedial program being promoted and developed through governmental agencies, there will naturally be a moral let-down in the spirit of nonofficial agencies to carry on. This should not be allowed to develop, as it is highly important that immediate steps be taken to synchronize the programs of nonofficial health agencies with those of the government.

Scope of Dentistry and Orthodontia.—Although the first dental school in the United States was established in 1840, it was not until 1870 that it reached any significance. Before 1868 there were no special education prerequisites to the study of dentistry and no legal restrictions for its practice. It was not until the different states enacted statutes under public defensive regulations that dentistry reached the status of a profession. In less than the span of two generations, dentistry now ranks second to medicine among the country's public health agencies. There are approximately 65,000 practitioners in the United States to serve about 130,000,000, which is one to about every 2,000.

Leaders in dental colleges are sounding a warning over a diminishing supply of practitioners and are offering convincing statistical information to prove their claims. Editorials have appeared from reliable sources questioning these claims. A fact-finding investigation on this serious problem would seem justifiable.

The best available records indicate that there are about 1,000 exclusive practitioners of orthodontia in this country. The first orthodontia school was launched by Dr. Angle in 1900. The average yearly increase for orthodontists has been about 30 per year. From the best available source of information on the number of dentists in general practice doing more or less orthodontia, we have an estimate of about one out of every three, or 21,666. It is the opinion of the one who assembled this data from commercial sources, that almost all these patronize commercial orthodontia diagnostic and treatment laboratories. It is the honest opinion of conscientious orthodontists, who have carefully observed treatment of the rank and file of general practitioners, that about one out of 50 is sufficiently qualified to treat even the more simple types of malocclusion.

Supply and Demand.—If we combine the 21,166 general practitioners with the 1,000 exclusive practitioners we have about 22,166 practicing orthodontia. It may reasonably be assumed that there are about 40,000,000 children of school age in the United States. The dentists of the United States, whom we have to accept as competent judges in this problem, estimate that about 15 to 20 per cent should have orthodontic treatment. Fifteen per cent of 40,000,000 leaves 6,000,000 in actual need. The relative percentage is the opinion tabulated by cross-section examination made of school children between the ages of twelve and fourteen years of age in 13 states by the U. S. Public Health Department in cooperation with the American Dental Association in 1933 and 1934, Bulletin No. 266. By dividing 6,000,000 in actual need by the total number of orthodontia practitioners, which is 22,166, there is one orthodontia practitioner to 2,650. If we conclude that one out of fifty of the 21,166 general practitioners is fully qualified, this eliminates 28 per cent and leaves about 435 to add to the 1,000 bona fide orthodontists giving a total of 1,435 fully qualified practitioners according to present-day standards of measuring orthodontia qualifications for practice. This indicates that 28,537 are urgently in need of orthodontia treatment to each qualified practitioner.

Undergraduate Education.—It is imperative that, if this country is to be supplied with an adequate orthodontic health service, it must necessarily be developed by the undergraduate schools providing more effective methods of teaching orthodontics. The aptitude of the students toward the dental specialties should be determined, and those found fitted and desirous of giving special attention to the several specialized branches should be inspired to appreciate the greatly increased demands on the part of the public for children's dentistry and preventive orthodontia and taught the fundamental principles leading to the successful conduct of practices in this field. They should be taught to lean more upon their school for advanced education, and the value of textbooks, scientific journals, the importance of consulting specialists, and to be wary of the dependence they place in sales promotion educational courses.

The committee endorses the recommendation of the Educational Committee of the American Society of Orthodontists urging a broader and a more efficient system of orthodontic education. Complaints have emanated from some of the schools, especially those not employing full-time orthodontia instructors, that it requires so much time that other more important branches would have to be neglected. It is our opinion that orthodontia and its

correlated branches are equally as important as any other branch and should justify the employment of a full-time instructor with teaching experience.

If the cramped condition of the budget does not permit an adequate salary for fully qualified instructors without depending on a clinic fee for financial aid in meeting it, we believe that modest clinic fees commensurate with infirmary treatment are justifiable, pending an improved financial status or a readjustment of the budget. We do not wish to leave the impression that orthodontia service should, at any time, be rendered gratuitously in educational institutions, except in some few cases for special teaching purposes. Experience has proved beyond a doubt that free service destroys the momentary value in the recipient's estimation and is conducive to such bad cooperation that all benefits are usually lost.

It should be pointed out that orthodontists, under the present status of orthodontia education, have for the most part concluded that a little knowledge of orthodontic treatment as an incentive to do corrective work would, under all probabilities, do the dentist and his patient more harm than good. From a practical viewpoint this is true, but it is not a healthy situation. This has arisen from the fact that the students were getting a very superficial course of instruction and practically no clinical experience. In some instances there has been a selfish motive in it.

The instructor has been content to emphasize the importance of etiology and diagnosis for recognition and did not burden the student or himself with the tedious and complicated problem of treatment. As a result of the dentist being taught that he is unqualified to treat malocclusion, which is true, he must in the performance of his duty refer the patient to a specialist. With a visiting instructor holding the friendship and confidence of his students, he, of course, realizes that he is in the most strategic position to obtain the referred benefits. Others, visualizing profits with more self-confidence and the friendly specialist some distance away, have fallen prey to the commercial orthodontia treatment laboratories.

Commercialism in Postgraduate Orthodontia Education.—All too many earnest but misguided practitioners have sprung up here, there and yonder, and publicly represented themselves as specialists after taking a few weeks' postgraduate work at $100.00 per week or paying some orthodontist a nice stipend to be his office guest for a few weeks.

The false propaganda of commercial orthodontia laboratories and the articles appearing in dental magazines prepared by their cohorts have led numerous dentists to believe that orthodontia is easy and highly remunerative. Those falling for this theory naturally seek the easiest possible route to become specialists even though they and their patients have to pay a severe penalty in the school of experience for inadequate training in the beginning.

There has been a constantly increasing demand for graduate orthodontia instruction for far more than a quarter of a century. The approved dental colleges were so slow in establishing graduate schools in preparation for specialization that many prominent orthodontists arose to the occasion and promoted postgraduate schools by following the custom and example of honored practitioners in medicine. These naturally developed into mercenary ventures by following the precepts of the outmoded proprietary system of dental education.

For many years they succeeded in conducting clinics and supplying instructions at $100.00 per week and up. During the last decade through the natural evolution of higher educational standards, supported by legitimate educational agencies, such as the Dental Educational Council of America and American Association of Dental Schools, this proprietary system has been rapidly giving way to higher and more acceptable standards supplied by the universities.

It was a natural sequence, some thirty-five years ago, when the specialty of orthodontia was charting its course, to follow the early precepts of general dentistry, but under the present-day American standards for education this kind of training for specialization should *now* be considered inadequate and obsolete. With dental courses now six years in length, it is inconsistent for agencies interested in the elevation of the dental specialties to grant them further approval. The university dental schools are now offering broad courses of instructions of one to two years in length to qualify for a certificate of proficiency or a master's degree. This plan is in complete harmony with the American standards of education for advanced training for business and professional careers and should be encouraged.

We should be very grateful to these worthy institutions, financed by public funds and endowments, for taking charge of this difficult problem of providing dental education. Under our American system of education, it becomes their duty to supply this higher educational service. It should be recognized as one of the most forward steps that graduate instruction for specialization has ever taken. It is common knowledge that there has been a considerable amount of criticism over the management of some of these graduate schools and their clinics. Some are known to be due to unwarranted prejudice and some appear to be offered as conscientious criticism for constructive purposes.

Such complaints as we choose to make should be made in a sympathetic manner, as it must be remembered that it was not until very recently that the specialists gave these schools very much recognition or support. We are prone to follow the habit of fussing and want to know why this thing or that thing is not righted without making an earnest effort to solve these problems in a businesslike manner.

There is always need for improvement in an educational system, just as there is need for improvement in other things. It is a fundamental requisite of education that it be provided with maximum efficiency at the least possible cost to the student. If we compare the fees of about $500.00 for the few weeks' course offered by proprietary schools with those offered for about the same price or less by the universities, it indicates that real progress is being made in offering more education for less money. It is apparent that dental education by tradition and custom is still clinging to the profit system.

Inconsistencies seem to exist that deserve special study and proper adjustment. A more fully rounded-out course of instruction on business administration for the orthodontia practice should be provided. The tuition for undergraduate and graduate dental training in the nonprofit educational institutions does not appear to justify the high fees accorded them. This becomes evident in comparing them with fees for courses in the other crafts and professions of equal standards which do not have the financial support that clinics provide in conjunction with dental courses. Dental school authorities should modify the incentive for profits and look forward to making reductions for tuition in the process of budgeting the different departments of the institutions.

Graduate Dentistry.—It is suggested that the administrators of dental colleges which conduct graduate courses on orthodontia, consider the advisability of making two divisions: one theoretical and the other practical for the purpose of reducing tuition and residential time on expense and lost earning power over a long period. The course of instruction should be based on a minimum time of one to two calendar years. The major part of the theoretical course should be given as an extension course and the student be given oral and written examinations to determine qualification for credits upon his return for clinical instruction. A compromise plan of supplying orthodontia education along these lines should merit serious consideration. This would make it more accessible to the thousands of dentists who are in greatest need, but cannot afford to pay out so much in time and money at one period.

Complaints are being made against some orthodontia undergraduate and graduate clinics becoming financial competitors of the private practitioner in some communities in which dental schools are located. These complaints do not arise so much from the number of patients being handled or the fees charged as they do to the lack of discrimination on ability to pay. Some of these clinics too strongly follow the policy of accepting cases and investigating afterward.

Reports would indicate that these educational clinics carry about 40 cases and the average fee is about $10.00 per month. On this basis it is probably considered competitive by those who are trying to build a practice and have idle time on their hands. These factors should be taken into consideration by those selecting a location. Dental school clinics for orthodontia are established primarily to serve as training laboratories for future dentists and orthodontists. They should not be operated for liberal profits in competition with private business. Greater care should, therefore, be used in the selection of clinical material for teaching purposes and less to the financial record. It is no more necessary for dental schools to supply the public with dental care after having fulfilled teaching requirements than it would be for an engineering school to build public buildings. Most of these dental clinics

do not have adequate social service bureaus to deal with the financial problem and rely too much on a superficial system of investigation. It should be relatively easy to effect a correction of these small problems if the orthodontists and the school authorities would meet on common ground for their solution. The management of these institutions should furthermore coordinate the clinic with the activities of the Crippled Children's Society and the state's Crippled Children's Act.

Crippled Children's Acts.—The Crippled Children's Acts of the various states offer opportunities to provide and extend orthodontia services to the unfortunate. Very few state Crippled Children's Societies which sponsored these Acts recognized malocclusion and dentofacial deformities as being of great enough importance to health to justify inclusion. This was mainly due to the orthodontists' failure to intercede in the interest of these dental cripples. In states in which their claims were presented, they were included. Some of these state laws broadly define a crippled child, and possibly a hearing before the Attorney General of some of these states might succeed in making orthodontia services available. In some states a friendly legal test would have to be made. In most of them orthodontia services could not be provided by any stretch of the imagination. It is the duty of the dental profession and the orthodontists in those states denying orthodontia services and other serious dental afflictions to see that the laws are amended as opportunity arises for the inclusion of these maladies.

The Oklahoma Crippled Children's Law is perhaps one of the broadest and soundest along these lines. All services rendered crippled children must be performed in an authorized and approved hospital. The hospitals must meet the requirements of the American College of Surgeons for a fully standardized hospital and have on the staff fully qualified specialists. The Oklahoma law is very liberal in qualifying children for admission and provides for itinerate roundup clinics: "The child must be a resident of the county for a period of six months prior to the filing for services, under twenty years of age and be afflicted with some deformity or suffering from some malady that can be cured or remedied by surgical and medical treatment in a hospital and that the parents or persons legally chargeable with the support of the child are unable to provide means for its medical and surgical treatment and hospital care."

Orthodontia services are specifically provided for and are given the same consideration any other deformity receives. As clinical facilities are limited, it is only right that a policy be followed of accepting only those cases having conditions seriously jeopardizing the child's general welfare.

The enactment of the Federal Social Security Act on Aug. 14, 1935, provides grants to states for maternal and child welfare and stresses the importance of making more adequate provision for dependent and crippled children. Many of the states have enacted legislation to qualify for these benefits; others are finding it necessary to revise their laws to harmonize with the Act. This is an opportune time for orthodontia to claim its rightful place in the matter of extending preventive measures and strengthening dental orthopedic services under both State and Federal Crippled Children's Legislative Programs.

The committee is of the opinion that dental orthopedic services should be authorized only through regularly recognized and approved institutions. We cannot conceive of it being in keeping with sound business principles of political economy to adopt the policy of legalizing the assignment of those afflicted with these serious anomalies to private practitioners or private clinics through Public Welfare Boards. Only three states have enacted laws requiring standards of proficiency of fitness for orthodontic practice. Any dentist in any of the other 45 states has the legal right to represent himself as an orthodontist if he desires to solicit orthodontia patronage, regardless of his qualifications. It would lead to the rankest kind of waste of the public funds. Failures would be on every hand. The cases selected for treatment are the most severe and complicated kind, thus requiring the best knowledge and skill obtainable.

Charitable Orthopedic Services.—A study of the aims and purposes of the established health centers, foundations, charity, philanthropic, fraternal, religious and health associations in our estimation could be safely trusted to the establishment of orthodontia out-patient clinics.

Their activities are limited to research and the care of the poor. They offer possibilities for the establishment of orthodontia clinics that would be noncompetitive, even though small fees would be necessary and desirable to aid in their support.

Among some of the important factors to be considered are a spirit of cooperation on the part of the directors and the orthodontists and a dependable budget. In order to have capable direction the selection of the part-time chief and a full-time staff orthodontist on an interneship is another highly important point to consider. Satisfactory equipment and furnishings may be had in the community for the asking or at little cost. As these recognized institutions have social service departments with proper formulated policies for admission, there is little chance of them coming in conflict with the dental profession.

There should be no serious objection to a nominal fee scale, depending on ability to pay and severity of the case, which might pay in whole or a part of the department's operating expense.

It is suggested that an interneship of a year might be provided for the students having completed certain prescribed courses of orthodontia instruction. Such clinics should allow suitable salaries for their personnel. As an illustration—With a part-time orthodontist as chief and a full-time interne with a young lady general assistant, the clinic should be able to care for about 60 regular pay cases. If 30 paid $5.00 per month, which is $150.00, and 30 paid $7.50 per month, which is $225.00, making a total income of $375.00, operating expense would largely be met. Such a suggestion has been made to some of the organizations operating Crippled Children's Hospitals in the country, and it has been favorably received.

Community Tax-Supported Clinics.—While sentiment is strong on the part of the orthodontists in certain communities to establish volunteer charitable orthodontia clinics, we do not think such enthusiasm is sound in principle. It would entail too great a personal sacrifice on the part of a few and would of necessity have to be handled too loosely to assure success.

It has been strongly suggested by some conscientious students of this extension problem that the interest of public officials and the public should be aroused on the subject, with the object of placing this responsibility up to local and county governmental agencies. Such a program would be financed exclusively out of local taxes and placed under the management of official health departments. A program of this kind is not considered feasible. The per capita cost of proficient orthodontia services is so large that an equitable service of this kind could not be adequately financed by even an enthusiastic tax-paying public.

The validity of such measures in the public school systems would be questionable under the Constitution in the majority of the states. The inability to maintain proper business policies and to provide a satisfactory control system under the domination of transient political management would be highly impracticable and undesirable.

The movement calling for the establishment of school dental clinics limited to the most simple and inexpensive kind of operations with small per capita cost has not had a satisfactory existence under statutory regulations governing education and the constantly changing political sentiment. The state laws rightly prescribe how school funds should be expended, and they are limited to education and those things incident thereto. They were not designed to provide curative and remedial health services. Community sentiment in many places has been strong enough to establish corrective clinics only to suffer curtailment and disintegration during political upheavals. In only a few places have they ever been able to demonstrate their worth under the rules and principles of political economy. Dental health educational programs on prevention, timely treatment, and home care are being welcomed and are accomplishing astonishing results in improving dental health of the children in school systems with well-formulated programs under capable management. These programs are designed to reach thousands at nominal expense and do pay tremendous dividends in improving dental health conditions of the community. It is not uncommon to find 50 per cent improvements in many communities in which they have been in operation two years or longer.

Community Charitable Organizations.—Curative and remedial dental clinics sponsored by dental societies and placed under the management of foundations and charitable organizations supported by endowments and community funds have shown real stability and are rendering valuable public service. Local dentists always serving as an advisory committee to the officers

and directors of the responsible charitable organization makes a pleasing arrangement. This places the dental societies in a position to direct the business policies of the clinic and to promote good will. The Red Cross and the Salvation Army have made splendid records with their experiments in this field of social service. The really successful ones have had full-time dentists and cooperate with the health officers of the school system, parent-teachers' associations, children's homes, provident associations, and other welfare organizations. Those operating with half-time dentists are very weak as compared with those operating with full-time staffs. The half-time staffs suffer severely in lost motion and are structurally weak.

Cooperative Hospitals and Mutual Health Insurance Systems.—The cooperative hospital and mutual health insurance systems, which attracted so much attention two or three years back, have ceased to grow in number. They were threatening to make a real dent in the socio-economic structure of medicine and dentistry. The psychologic effect of the Social Security Act and the strong indications that Congress might enact legislation to establish a Federal-State Health insurance system have not left sufficient guarantee for the movement to spread and to organize units.

They are being sponsored by farmer and labor organizations with the aid of the Federal Cooperative Commission. Due to the strong persuasive effect of laws regulating the practice of medicine coupled with the disciplinary effect of codes of ethics of the professions and the crusade to force recognition of these principles, only a few practitioners have been bold enough to advance the plan. Some of the different health insurance plans come under the jurisdiction of the insurance acts of the states. The cooperative system is highly objectionable because it places medical and dental care under control of laymen to dictate the business policies of the organization. It further opens the way for ruthless racketeering on a competitive basis, and the most priceless of service "quality" is recklessly sacrificed. It offers little incentive for reward if operated on a broad scale because it destroys the present personal merit system. The cooperative system may be able to make a conspicuous place for itself in dealing in commodities that are tanglible, such as gasoline and food, but it is doubtful if the actuaries and statisticians will soon be able to produce a safe and sound plan for the purchase of such an intangible and fluctuating thing as health and life on a reasonable cost and fair profit basis.

Medical and Dental Social Service Bureaus.—The Medical and Dental Social Service Bureaus in cities in which they have been established are successfully filling the gap between practitioners' standard fee scale and that portion of the needy public whose financial resources are not capable of paying regular fees.

They have had sufficient time to pass through the experimental stage to prove their worth. Where they have had the moral support of the profession and have been placed under capable business management, they are proving a success. They give promise of rendering a much broader public service as the public becomes aware of their sympathetic and efficient service. Hundreds are learning to take their financial health problems directly to the bureau where they can select high quality services on a monthly payment plan that fits the family budget. They are also providing a reliable credit rating and collection service. In some cities the dental profession has failed to lend them the support they deserve.

Extension of Services in Private Practices.—In order to appease public sentiment and to increase orthodontic practice, it is suggested that patients seeking services be carefully classified into four groups according to the diagnosis, the prognosis, treatment requirements, and ability to pay.

Those with a hereditary and constitutional etiologic background in diagnosis and having an unfavorable prognosis, risk the reputation of the practitioner, complicate treatment, and make the treatment time so uncertain as to justify a higher fee than those belonging to the group of local causes with a favorable prognosis.

The point is that careful judgment should be used in diagnosing and selecting cases, as frequently one case will require an accumulation of time and production expense that might be given to three cases in greater need and offering more net profits at a much less per capita fee. Classify as follows: Class 1—severe cases with high income and extravagant spending habits. Class 2—severe and favorable cases with modest income and conservative spending habits. Class 3— only favorable but needy cases with low income and close living.

Ten per cent of the annual income is considered about the maximum amount the Class 3 group can trim out of the family budget for unexpected orthodontia treatment or an expensive protracted illness. Contracts in Class 3 patients should call for morning appointments, just as frequently as desired, without question, as a reciprocal courtesy for special rate. Class 4—cases seriously in need of treatment but unable to pay the practitioner's minimum fee of Class 3 rating. A frank admission by patients should be brought out in Class 4 and the case referred to a qualified man with idle time on his hands or referred to a charity orthopedic clinic or Medico-Dental Service Bureau if one is available. A fee scale should be established for each class according to the practitioner's judgment and revised from time to time to meet changing economic conditions and the demands being made upon his office for services. All should have a satisfactory pay rating to become acceptable to any class.

Too much emphasis cannot be placed on enforcing financial contracts. The accumulation of bad accounts is forcing the per capita cost of production up to the point where fee scales are forced upward to compensate for the potential profits lost on bad accounts. This careless habit is inconsistent with sound business principles and should not be allowed to exist in any well-regulated practice.

The United States Chamber of Commerce estimates that the annual income of the population is about divided as follows in 1936:

2% have incomes over $10,000.00
3% have incomes of $5,000.00 to $10,000.00
50% have incomes $2,000.00 to $5,000.00
45% have incomes less than $2,000.00

According to these statistics about 2 per cent would have an economic rating of Class 1, about 3 per cent in Class 2, about 50 per cent in Class 3, and about 45 per cent in Class 4.

In contrast to these figures approximately 350,000 purchased automobile licenses for touring cars and coupes in Oklahoma during 1936 (exclusive of trucks). This is one to a little less than seven people of all ages and color. Figuring three and one-half people to a family it is one to every two families. Oklahoma is but an average state in per capita wealth. It practically forces us to conclude that the American standard of living calls for an automobile first, and the profession and government can figure out a way to take care of their health. About twice as many children are born into the families having incomes of $2,500 or less, than in those having incomes of over $2,500. The liberal policy of commercial credit extension for installment buying of luxurious things is orthodontia's greatest economic competitor. The old family virtue of practicing thrift to buy the more necessary things is apparently becoming a lost art with the masses.

Dr. Floyd E. Gibbons in a very pointed manner has presented some pertinent facts and recommendations covering the possibilities of extending orthodontia service through more efficient practice management. He advises us that there are approximately 45,000,000 children between the ages of five and twenty years of age in this country. The White House Conference on Child Health estimated that 80 per cent of these children suffer from major or minor defects of occlusion and only 2 per cent receive orthodontic treatment. Doctor Gibbons rightly insists that three cardinal principles must be followed:

1. The highest quality of services must be maintained.
2. Orthodontic services must be produced at a lower cost in order that fees may be brought within reach of a greater number of the afflicted.
3. The orthodontist must receive a fair and adequate compensation for his services.

He offers the following principles as a logical and practical approach to expansion by utilizing existing facilities in private practice:

"1. The development of greater executive ability on our part.
"2. The development of a highly efficient organization of capable, well-trained assistants.
"3. A more efficient and systematic management of our practices.
"4. Increased facilities for efficient production.
"5. More extensive educational publicity among both the dental profession and the laity regarding the beneficial results, which may be obtained through the interception and prevention of malocclusion."

Practitioners are warned to be extremely careful and to exercise the keenest business judgment in their ambition to serve a greater number at lower fees for those in the lower income brackets. It is very easy to ruin profits or make an economic slave out of oneself by letting the cost of production per income hour equal the per capita fee in high rents, salaries, and elaborate and expensive equipment. Another thing, the family living expenses should be budgeted to coordinate with the average net monthly income.

The average amount of time the office spends on each case divided into the annual income production hours will determine the approximate number of cases the office can handle efficiently—provided proficiency is not being curtailed by number on hand. One thousand to twelve hundred hours may be added for each additional orthodontist, about 500 additional income hours for each technician, and 300 hours for each general lady clerical assistant. In other words, it is estimated that these technical assistants will add 500 and 300 hours additional income production time. The annual income production hours divided into the anuual fixed operating expenses will give the approximate average cost of production per income hour. Many practitioners would be astonished to learn their individual expense per income production hour if a full and accurate estimate were made.

Multiplying the hourly production cost by the average number of hours consumed per capita and deducting it from the average amount collected on each case, will give the average net profits for individual cases. Dividing the number of hours expended on treating the case into the net capita income determines the net income per each production hour on the case.

All available figures on production costs per income hour were of such variance and figured in so many devious ways with so many extenuating factors that no reliable figure in the form of a basic guide can be offered for universal use. Each office must figure out its own financial status. It is absolutely necessary that dependable bookkeeping be followed if the orthodontist is to protect himself properly. This is doubly important when planning an expansion program, for it may be difficult to attract enough patients at profitable figures to compensate for the expansion costs, which are expensive.

Supplies and Equipment.—The great need for substantial reduction in supply bills has been met with the new alloys on the market for orthodontic purposes. Stationary equipment, such as dental chairs, cabinets, engines, etc., are too high from a practical viewpoint. This is principally due to a controlled one-quality price standard. Dentists and orthodontists do not have any range of selection on prices for dependable up-to-date equipment. The dentist who caters to those in "low income" districts has to pay the same price for dental equipment as those who cater to those in "high income" districts. There is great need of a much broader price range for selection in durable dental goods. As it is, those buying equipment have to fall back on badly damaged and outmoded secondhand goods, with little to choose from, or buy beyond practical economic limitations for themselves and the community.

Personal Ownership Offices.—Private office buildings located in community centers and bordering substantial residential sections in the trend of commercial development are considered sound investments. Their principal economic advantage lies in the fact that they establish forced savings accounts and offer better facilities for the conduct of a practice.

Children's Dentistry.—The need for a deeper appreciation on the part of general practitioners toward the general dental health requirements of children is of vital importance. The sponsors of the American Society for the Promotion of Children's Dentistry are to be congratulated for the establishment of this agency. This organization sponsors an educational program that deserves attention. It is furnishing selective articles on children's dentistry by national authorities to all state dental society bulletins through the secretary of the Dental Editors Association. One of our own members, Dr. O. W. Brandhorst of St. Louis, is serving as secretary of the Dental Editors Association. It is suggested that you get in touch with him for more detailed information.

Members of the Society should check up the editors of their state dental society bulletins and insist that they make use of these articles whenever space may be allowed.

Orthodontists would do well to lend their moral and financial aid to this organization by becoming members and aiding in the development of state units. The establishment of state units for the promotion of children's dentistry would fill a big gap in professional

education on children's dentistry and preventive orthodontia. Such organizations provide a common meeting ground for all those interested in all kinds of dentistry for children.

False Opinion and Propaganda.—There is a widespread opinion among the laity and the dental profession that orthodontia fees are exorbitant or excessively high. The general idea is that it is only within the reach of those having a fat pocketbook. In a recently conducted survey through 1,200 dental practices, by the use of a questionnaire covering a large number of vital points, the only significant protests regarding dental fees were those relating to orthodontia. Literally thousands of children are being denied an opportunity to have their parents open-mindedly consult orthodontists and obtain treatment on account of fear of the price. This is in a large measure due to the wide publicity given the tip top fee occasionally collected and sometimes not by orthodontists and patients in the higher economic strata of society. Articles conveying this impression are to be seen frequently in proprietary dental journals and popular magazines.

The fact is that the average orthodontia fees for the past eight years among bona fide orthodontists show less net profits than the more remunerative lines of general practice. Orthodontists have been very charitable. Our cost of production goes unrecognized. A tactful and well-directed educational program is greatly needed to correct this false impression.

Another unwarranted but damaging criticism of wide proportion is that orthodontia societies never hold open house or issue a cordial enough invitation or make visitors feel welcome at orthodontia meetings; in other words, they are endeavoring to establish a monopoly. It is suggested that orthodontists in different communities invite the dentists at appropriate intervals to attend especially arranged programs and that representative dentists be given an opportunity to present their problems. Orthodontia societies should give this problem some special consideration, as friendly relations between the different divisions are a most valuable business asset. If orthodontia education for the dental profession is curtailed, the public suffers proportionately.

It is apparent on all sides that the profession and the public are rapidly becoming more appreciative of the value of orthodontia. This is undoubtedly due to the splendid corrective treatment being performed by a representative group of orthodontists scattered throughout the country, combined with broader and more practical methods of supplying public education.

Commercial Orthodontia.—The charlatan has been quick to take advantage of the greatly increased demand by the public for specialized services of high quality. Numerous firms and individuals with questionable rating were ruthlessly racketeering orthodontia by advertising their appliances and treatment service through proprietary, semi-proprietary, and even some official dental journals. Some of the publications were carrying from one to seven ads in each issue. A campaign against this quack system of practice was launched about two years ago by the Southwestern Society. With the sympathetic support of the members of American Society of Orthodontists this movement has succeeded in winning the support of the publishers to the extent that this objectionable advertising has been eliminated from almost every journal in the country. It should be a great satisfaction for the profession to know that after subjecting the publishers to such a severe test on business and professional ethics of an extraordinary character, they whole-heartedly supported our claims after finding them valid. This cooperative spirit on the part of the publishers should lead us to believe they are interested in upholding the profession's code of ethics.

This evil method of dispensing orthodontia services, which dentistry acquired in its early days, was thought to be a fixture which would have to be endured indefinitely. It offers a striking example of the things that might be accomplished by well-directed and united effort if the objective is a worthy one. The friendly passing of this objectionable advertising has been marred by a breach of confidence on the part of one publishing company: *Dental Survey*, p. 846, June, 1937. Another one of the principal offenders offered to discontinue this objectionable advertising if we could prove to the management's satisfaction that commercial orthodontia laboratory advertising is detrimental to the public and the professional welfare. Although sufficient evidence has been submitted to substantiate these claims, *Dental Items of Interest* has so far failed to change their policy.

Public Health Education.—A short while ago Chicago University and the American Association for Adult Education conducted a survey to determine what adults most preferred to read. The survey cost $25,000.00 and took two years. It was revealed that the subject of health ranked first.

The public is eager for information on health topics as evidenced by this survey and the public reception given the crusades being waged against venereal diseases. The subject of birth control and eugenic laws has recently been brought out for consideration and found the public deeply interested. It should inspire agencies charged with the responsibilities of carrying dental health information to double their efforts to supply this public demand. Even some of the most popular magazines having the largest circulations have offered to published articles on orthodontia if they were prepared in a comprehensive manner for the public. This opportunity to render both the public and the profession a great service has been neglected the past year. Even withstanding some carelessness, satisfactory progress seemingly is being made in educating the public toward an appreciation of prevention, periodical examination and early treatment, but opportunity for improvement is manifest on every side.

Social Legislation.—Billions are being spent to treat effects, and a ridiculously small amount is going into research and prevention. The biologic aspect of the problem which is of such vital importance is being almost totally ignored. Since legislation seems to be the most popular method of solving all our socio-economic troubles it would seem more logical to start from the foundation up with simple, sound and sane eugenic laws for the purpose of producing a better and healthier population. Millions are being spent to treat the evil effects of bad breeding. In our complex social order the need of a sound mind and body is becoming more and more evident if the individual and his dependents are to be capable of self-support under the American standard of living.

Under the present system of indiscrimination, two mentally unbalanced or badly diseased people can wed and reproduce without any legal restraint or moral guidance in wedlock or birth control. For example, a normal woman is innocently allowed to wed a man with violent and transmissible syphilis or tuberculosis. One to a dozen children may be born and the whole family thrown on charity or a paternal government at the expense of the producers of taxes in a most unjust fashion.

Reorganization of the American Society of Orthodontists.—The reorganization of the American Society of Orthodontists into a unified national association of orthodontists is a great forward step. It should enable the specialty to perform its professional and public duties more effectively. In this connection it is suggested that the sectional societies adopt a policy of developing strong educational programs and the parent organization adopt the policy of giving more time and attention to the business affairs of orthodontia in its relation to the public and professional welfare.

This subject of socio-economics is so stupendous and is so confused with speculative legislation that it has been almost impossible to devise any special plans for broadening the service, except in a general way. We have for the most part had to content ourselves with giving you a word picture of its present situation to use as a guide for future activities.

T. W. Sorrels, Chairman,
H. A. Allshouse, Jr.,
R. E. Irish.

Editor's Note.—Reprints will be furnished by the publishers at a modest price upon request.

CHILDREN'S DENTISTRY

E. H. JACOBSMEYER, D.D.S., CLAYTON, MO.

IT IS only within the last fifteen or twenty years that dentistry has recognized the child as a desirable patient. It was within the age of most of you that children's dentistry or pediadontia, as it is known today, was recognized as a specialty in our profession. This change of attitude or this trend probably was stimulated by the stress laid on prophylaxis in all lines of teaching in the healing arts. Medicine made the greatest advance in all its history within the last half century due to research along the line of prevention of disease. Slowly prevention began to be heard of in dentistry, first by the term prophylaxis, applied to the act of cleaning the teeth. Originally, it was so applied to simplify dental nomenclature, but today I feel sure that the average prophylaxis as performed in the dental office is just what the term implies. Keeping step with the rapid advance of medical science, our profession broadened its horizon until today we are practicing true prevention by attending to the dental diseases and deformities of the very young child. The advance of orthodontic technique has been astounding in the last few years as has also the treatment of dental diseases of the child.

Most essayists who have written of children's dentistry in the past assumed the attitude of a salesman trying to sell the professional man on the need of caring for the child in his or her practice. It was a difficult battle to defeat the average dentist's assumption that the deciduous teeth were unimportant and any operative procedure unnecessary to preserve them as sooner or later they would be lost. Thanks to lusty orators and prolific writers, we find that this attitude has given way to a saner and healthier treatment of the subject.

When asked to read a paper before this organization, I decided I would not attempt to sell children's dentistry to you, but you will pardon me, if I do just a bit of selling at this time. For twenty-two years I have been struggling with indifferent success with the gold inlay, the shell crown, the Davis crown, the pivot tooth, the Richmond crown, the porcelain jacket, the partial denture, the full denture, the fixed and removable bridge and a host of other gadgets, the treatment of infected and involved pulps, pyorrhea and many other diseases. So far I have never placed the ideal inlay; my crowns could always be improved upon; my bridges and dentures could fit better; and the result of my treatment of devital teeth is a long record of failure. Frankly, I do not believe that I have greatly benefited mankind in all these efforts. Certainly I have been conscientious, my methods have been comparatively modern, I buy all the latest casting equipment, and still I am dissatisfied with the results. But when I think of the results of treatment of the child, I begin to feel a bit kindlier toward myself; and as I look back, here and there in my years of practice I see a successful result, entirely satisfactory to my-

self and doubly so to an appreciative parent and sooner or later to a grown child. By the early treatment of a decayed deciduous molar, I feel that I have prevented a heart lesion, I know I have prevented many deformities of the arch, I am positive I have aided in building a healthier body for the child, the better to fight the many conditions I know will confront this child as he or she advances through life. I feel that children's dentistry is more of an exact science than any other branch of our profession. Also I think that the need of panel or socialized dentistry in any of its many forms would be unnecessary if we as a profession would adequately attend to the dental needs of the child.

In the short time I have to present this subject I can only touch upon the high spots of methods of handling the child and treatment. Let us first consider the handling of the child, or child psychology in dentistry. To begin with, I find it entirely unnecessary to provide a specially equipped operating room. Please do not misunderstand me when I say this, for many and better men than myself have used them successfully, and I do not condemn them. But they always appear to me as playrooms, and if there is one thought I desire to impress upon my child patient, it is that my operating room is not a playroom. They find so many things to play with in the conventionally equipped office that at times it takes both my assistant and myself to drag them off the pedals of the operating chair or the cuspidor controls. I believe a boy past seven years of age, when he is beginning to be convinced that he is plenty tough, would resent being put in a room with doll houses and Three Little Pigs or Shirley Temple all over the walls.

I am never in the operating room when my assistant seats a child for the first visit. She is instructed first to see that no instruments are exposed to view, that lights are subdued and shades drawn at the window. She is forbidden to hurry a child into the chair, to talk too loudly, and above all, no child is ever called honey, sweetheart, dearie, sonny, sister or any of those silly, endearing terms. After a few minutes in the chair during which time the patient has visually examined most of his or her surroundings, I enter very deliberately and wash my hands, without speaking to the child. If the mother is present, and she is usually permitted in the operating room, seated in a chair well in back of the patient, I make one or two casual remarks to her. Then I leisurely advance to the side of the seated child, and make a point of sitting on an operating stool to strike my first acquaintance. Just a few remarks are made about anything but teeth. A minute or so spent in feeling out the child and allowing the child to look you over well will repay you tenfold. Then the mouth mirror is brought forth for the patient to examine, and finally the examination of the teeth begins, each movement being deliberate but positive. Most children are of such a temperament that they can be easily handled in this fashion; others, according to their individual temperaments, must be cared for in other ways. If the child is unusual, proceed slowly until you have found the proper method of procedure. This can be done by studying the case. Ask very few questions. Learn their likes and dislikes. If a girl, admire a particularly striking bit of clothing, inquire about a pet

dog or cat. If a boy, discuss football, skating or any sport the child might be interested in. If I happen to know a playmate, I tell them how fine a patient this friend is. A bit of competition between children has helped me finish many a difficult job. All children aspire to becoming a Boy or Girl Scout when they grow older. If a child is at all unruly, I tell him that he will have to have his teeth attended to before he can join the Scouts, and that one of the first questions asked a prospective member is whether or not he is a good patient in the dental office. Never are any of these remarks made in a threatening manner. They are made quite casually, so as to lend the impression that I am not at all interested in whether or not the operation is completed. If he resists all these efforts and refuses to allow me to do anything for him, I quite casually lower the chair and dismiss him, the assistant makes another appointment, the parent is informed of my method and reason for dismissal, and usually when that child returns he is quite ready to proceed. And from that time we are pals and work together as pals.

Talk to a child about things that a boy or a girl slightly older would be interested in. In so doing, you appeal to the child's vanity, for at that age children always want to appear older than they really are. I never talk about dolls or tell little stories. I do play a few games. For instance, in cleaning the teeth I am always cleaning the upstairs or downstairs rooms, leading the child on to telling me what room we are cleaning now, whether its Buddy's room or Sister's room or the kitchen or the sunporch and so on. Then we find a particularly dirty place in the living room or pantry and later we have to use a buzzer to clean it well. We never grind out a tooth or clean out a tooth, we always clean it off or polish it. When I use novocaine, and I use it often, I am never putting something *in* the gum, I am putting something on the gum so I can do the job more easily, not that it will not hurt. Avoid "hurt" or "pain" at all times. Asking the patient if that hurt, is unnecessary. You know whether or not the child was hurt. Instead, when you see that the child has had a bit of pain, casually remark that you will soon be finished or that that little spot is almost clean. In short, all this discussion pertaining to child psychology resolves itself into this: "Be normal and treat the child as a normal human being. Talk with him and laugh with him as you would with some one you might meet under different circumstances."

Occasionally if a patient, usually a boy, seems to resist because of a temper or an unusually mean disposition, an index finger hooked into the corner of the mouth and given two or three rapid good yanks accompanied by a look of anger, will help. But immediately after such treatment be normal again and act as though nothing unusual has happened, and I mean immediately. The child is more surprised that I am nice to him again and smiling than he is that I intentionally hurt him. And he now realizes that I am master of the situation.

When I have exhausted all efforts to gain a child's confidence and I see that I am *not* succeeding at all and probably never will, I do not hesitate asking the parent to take the child to some one else, for I realize I cannot have the confidence of all the children who come into my office. When I lose

a child's confidence, I can always look back and find some incident, action or remark that destroyed the patient's faith in me, and I have been taught another lesson.

Avoid difficult or multiple extractions. That is the job of the exodontist. Too often the patient will refuse to return to the office after such operations, even if painless, for they have seen blood, and instinct tells them that bleeding is fearful, and they want no more of it or of you. I have failed in my handling of children oftener through extraction than through any other operation. Place this burden upon the usually broad shoulders of the exodontist.

While I am not especially in favor of the reward system of gaining one's end with the patient, I do use the Oral Happiness Junior buttons made by Ritter. You are probably acquainted with them and the child is momentarily pleased to have one after the mouth has been put in a fairly healthy condition. The American Dental Association is offering a Mickey Mouse button that can be purchased through the Chicago office. I have not seen it but illustrations in the last *Journal* look attractive.

Now to the filling of deciduous teeth. While I do use the gold inlay occasionally and copper cement upon rare occasions, I find the amalgams, silver and copper, to be the most practical type of filling material. Because I think you will be more interested in the amalgam fillings, I shall discuss cavity preparation of only this type of restoration. In pit cavities so small that the explorer just barely detects an irregularity, I begin the preparation with a No. 35 inverted cone bur. I never have been able to break through enamel rapidly with a round bur or a mounted stone in these pits. The sharp points or blades of the inverted cone held at an angle seem to cut through the enamel faster for me than any other bur. I establish the floor of the cavity with this bur and a slightly larger one, then with a stone I finish the preparation. If the cavity is a large one, I begin with a round bur, removing most of the decay, then establish cavity with a stone, followed by an inverted cone bur for retention.

When dealing with proximal caries, I begin as described above in the occlusal pit nearest the decay. Then with an inverted cone bur of proper size I cut mesially or distally as the case may be to the decayed area. I follow this with a No. 38 or 39 inverted cone, again cutting from the pit to the area of decay. A chisel, and I like the triangular bladed chisel No. 48, S. S. White, is then used to break down the undermined enamel, exposing most of the carious area. Now with a stone, shape the proximal area and finish the enamel margins, always followed by using the gingival margin trimmers. The use of these trimmers will prevent recurrence at the gingival better than anything I know, and should be used in all proximal cavities. Your own judgment must tell you how deep and how wide the tie between the proximal and the occlusal sections of the filling must be. Lack of sufficient strength from bulk here is a great cause of failure in this type of filling. In extensive caries, where there is danger of pulp involvement, I do not hesitate leaving a small bit of infected dentin, relying in these cases on ammoniated silver nitrate or a copper cement base to check the progress of decay. I feel I hardly need speak of preparation of the gingival cavity, nor of the proximal cavity in the

anterior teeth, they are too simple; in fact all this cavity preparation naturally is simple and familiar to you. I am only going into this detail hoping that each of you may gain one little point or two that will help in dealing with the children in your practice and make it just a bit pleasanter for you and the child.

In deep caries, a copper cement base is used; and if not so deep but where there is danger of pulp disturbance if silver amalgam is used, I first place a sloppy mix of copper and finish packing with silver amalgam. A matrix, usually the small ivory, is always used when physically possible, with a band that is accurately trimmed so as not to extend too far under the gingival gum as to cause pain. I will not attempt to tell you anything about the condensation of amalgam. Thanks to recent research, the technique of the condensation of amalgam has been greatly improved upon, so much so that the amalgam filling of a few years ago does not even look like the present-day filling, and the standardization of dental amalgams through the aid of the Bureau of Standards at Washington has given us a far better product to work with.

Some of you may question the wisdom of using copper as a base for silver amalgam. I do not know what sort of an alloy this makes; I cannot discuss the metallurgical aspects of the case, but I do know that I have used it fairly successfully for many years, and I feel that I protect the vital pulp better in this way than without it. Upon extracting a great many teeth treated this way I find that the pulp was well protected, decay arrested and the filling giving the service expected of it.

Now I come to pulp involvement and treatment of devital deciduous teeth. After years of trying many different methods and agents I have practically ceased canal treatment. I think extraction is indicated. The small percentage of success hardly justifies the many dangers to the health of the child to which pulp treatment subjects the individual. First of all, I am the guardian of my patient's health. That is my greatest concern. So I feel that I cannot conscientiously allow a devitalized tooth to remain in a mouth, a tooth which may, at some later day, be the direct cause of infection and indirectly affect a vital organ of the body. We know that we cannot hope to remove all pulp tissue in a deciduous tooth after devitalization; then, when we know all devital tissue has not been removed, we attempt to fill the canals only partially. Many authorities even advocate filling only the pulp chamber. Such procedure in the permanent teeth would surely be frowned upon. I have found that the need of devitalization usually occurs after resorption of the roots has begun, making the task infinitely more difficult than when we have a definite root and root canal to deal with as in the permanent teeth. I am mindful of the success of other operators in this work, and there are many who advocate different methods of pulp canal treatment and are seemingly highly successful, but I am speaking to you only of my own experience.

After a deciduous tooth has been prematurely lost and its position in the arch is such that a deformity may result, a space maintainer should be used. This maintainer may be built in one of many styles, but I have found the one which I shall now describe the most practical. It is anchored in the mouth with a cast gold crown on one of the adjoining teeth, usually a deciduous first

or second molar. Separate the tooth to be crowned from the adjoining tooth with brass wire as an orthodontist separates to place a band. With a small carborundum stone, cut the opposing cusps in each arch until the necessary thickness of metal can be placed between the teeth when in occlusion. Grind the enamel at the "belly" of the tooth slightly but not necessarily as thoroughly as for a cast crown for a permanent tooth. Fit a copper band, anneal it and contour to the gingival gum carefully. Take an impression with modeling compound and on the resulting model cast a very thin shell crown using a fairly hard gold. If, upon fitting in the mouth, the crown interferes with occlusion, it may even be completely ground through to the heights of the cusps without greatly weakening its retention form. A wire loop soldered to the crown to fit into the edentulous space and to contact the tooth at the opposite side of the space completes the maintainer. This type has the advantage of being readily adjustable, for by slightly bending the loop a wider space may be retained or created. It has the advantage of being very simple and if carefully fitted it is not easily loosened. Avoid complicated preparations. While the maintaining of occlusion artificially after loss of a deciduous tooth may be highly desirable, I find that a maintainer that accomplishes this result is difficult to keep in place. At times it may be necessary to use two abutments for greater retention; then a crown is made for the teeth on both sides of the space and the loop soldered to the two crowns. This is often done in the anterior teeth. When the parent objects to the show of gold, bands may be used instead of crowns, reducing the area of metal shown but necessitating seeing the patient oftener to watch for decay.

Always allow the child to extract his own very loose teeth. Often if I find one slightly loose and I want the tooth removed, I ask the child to get rid of it before the next appointment and I tell him that if it is still there at that time, I shall have to remove it. Invariably he returns in a few days with the tooth missing. If it is necessary that I extract—and remember, as I said before, avoid difficult or multiple extractions—I use novocaine with an infiltration injection, injecting very, very slowly. A topical anesthetic before placing the needle is a great help. Always tell the child what you are about to do, and as the needle is placed I carry on a running line of conversation or rather chatter, in a low, even tone. You must realize that the child's actions are governed very much by yours; so if you show no excitement or change of attitude, the child sees no reason to do so. After waiting a few minutes, during which time you should walk out of the operating room, extract in the usual way. If a general anesthetic is desired and *I* am called upon to perform the operation, I use an ethyl chloride spray on gauze placed over the nose and mouth, taking, of course, the ordinary precautions to prevent a fragment of tooth or foreign body from dropping back into the throat. It is possible to obtain a very light anesthesia in this way, and of sufficient duration to remove one or two teeth.

The use of the x-ray examination is an aid in determining the approximate time of eruption of the permanent teeth, and, therefore, the proper time to extract the deciduous teeth. In fact, it is a good policy to radiograph all child patients who come into the office. We learn whether or not there is an absence

of any of the permanent tooth buds. It is surprising how often a bicuspid, especially one of the lowers, will be found congenitally absent. If such is the case, a deciduous molar may be retained to preserve the arch. Also, we may detect supernumerary teeth and remove them before they cause malocclusion. They are often found in the maxillary anterior region. I use the small Eastman No. 0 radiatized film for small children.

Just as long as the professional man looks upon dentistry for the child as something of a temporary measure and as long as fillings are of the thumb and finger type, with no attempt at scientific, skillful cavity preparation, just so long will his fees be far below the average fee for similar work for the adult. We establish our own fees, and, in the end, we are paid exactly what our services are worth. If a low fee is charged, the services will be of an inferior quality. There is something about a fair fee that stimulates the operator so that he renders better service. Look back through the last few months of your practice. How many complaints were made about charges made for services rendered the child? I venture to say they are few compared with complaints about fees made for adults. A parent is far more apt to spend money for the needs of a child than for his own wants. This is a well-known fact; so give the young patient the best you have, and without a doubt, you will be well paid, and cheerfully, by a grateful parent.

Department of Oral Surgery

Edited by

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HULLIHEN, THE ORAL SURGEON

EDWARD C. ARMBRECHT, D.D.S.,* WHEELING, W. VA.

(Continued from page 638, June)

UVULA SCISSORS, A NEW INSTRUMENT. By Dr. S. P. Hullihen, Wheeling, Va. Am. J. Dent. Sc. **7**: 274, 275, 1847.

The accompanying cut [Fig. 15] represents the construction of this instrument pretty well, except a slight lateral curvature that is in the blades. It likewise exhibits so plainly the adaptation of the instrument to the purpose for which it is designed, that further description of it, or any directions as to the manner of using it, is deemed entirely unnecessary.

This instrument was contrived some time during the winter of 1843, at which time, through the aid of Mr. Kryter, of this city, I had one constructed; after testing it fully, and finding that it fulfilled every indication necessary for the easy and speedy removal of just so much of the uvula as might be desired, I placed it in the hands of Wm. R. Goulding, surgical instrument maker, of New York, some time during the month of July, 1845. This gentleman immediately made up several of them, and has kept the instrument for sale ever since.

Although both useful and convenient, this instrument is not claimed to be one of much importance, simply because the operation for which it is intended is but a very trifling one. Yet, unimportant as the instrument may be, I perceive that it has been exhibited before the Dublin Surgical Society, with some show of consequence, and claimed as the invention of a Mr. Carte. It was presented before that Society by Dr. Beatty, who, after having exhibited a new instrument for dividing the fraenum linguae, said, "The next instrument he had to exhibit, displayed, he observed, much greater ingenuity, and is the invention of Mr. Carte, who, in order to have justice done to the instrument, ought himself to have submitted it for the inspection of the Society. It had been placed in his (Dr. Beatty's) hands by Mr. Millikin, by whom it had been constructed.

*From the oral service of the Ohio Valley General and Wheeling Hospitals.

"The instrument he looked on as an exceedingly ingenious contrivance for facilitating the removal of a portion of the uvula, an operation which, though simple, is yet sometimes attended with difficulty, and occasionally with danger too, on account of the detached portion falling into or against the air passages. This instrument, at the same time that it cuts the uvula, has a provision by which it secures the divided part, and thereby prevents the possibility of the inconvenience just alluded to; it consists, essentially, of a pair of scissors with blunt points, but, in addition to the ordinary cutting blades, there are, beneath these, attached by means of screws, a pair of blunt supplementary blades, whose flat surfaces come in contact with the substance of the uvula, and seize it while it is being detached by the cutting blades."—Dublin Med. Press, May 13, 1846, p. 290.

Now, as this instrument has gone forth to the profession in Europe, as the invention of Mr. Carte, and in this country as my invention, and as it must doubtless appear highly improbable to every one who may have noticed this, that an instrument alike in every particular, should have been original

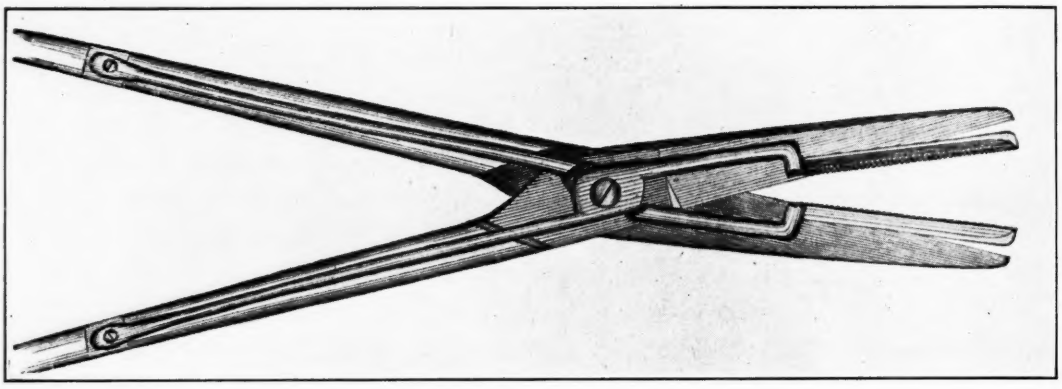


Fig. 15.

with us both, and being unwilling to appear as having owned that which did not properly belong to me, I thought it right to place the claims of both Mr. Carte and myself, so far as it was in my power, before the profession, as the best way of explaining this singular coincidence.

This instrument, when made a few sizes larger than represented by the cut, and the supplementary blades with long sharp teeth, likewise answer a most excellent purpose for the excision of enlarged tonsils.

Cases of Tic Douloureux Successfully Treated With Lunar Caustic, by Applying It in the Antrum Maxillare, & c.; described in a paper read before the Ohio Co. Medical Society of Virginia. By Dr. S. P. Hullihen. N. Y. Dent. Recorder **3**: 225-233, 1849. Am. J. Dent. Sc., 1st Series **9**: 86-95, 1848. Dent. Reg. **2**: 122, 1849.

Mr. President: I propose to offer a few observations on the effects of lunar caustic, when applied over the situations of painful nerves, as noticed during the treatment of several cases of tic douloureux.

Having observed that certain diseased conditions of the antrum maxillare induced tic douloureux, and that in all such cases the painful paroxysms could be greatly soothed or aggravated by the kind of injections thrown into the antrum—that of all the injections so employed, none had so distinct, so powerful, and so extensive an effect as lunar caustic; and knowing, too, that lunar caustic had been sometimes applied over the eyelids and brows, with the happiest effect in allaying pain and undue irritability of the eyes, I determined to try it in the treatment of true tic douloureux. I say true tic douloureux, a rare disease, emanating from some local cause either about the head or neck, in contradistinction to a spurious tic douloureux of the face, a complaint which is so frequently met with, and comparatively so easily cured; but a complaint always induced by debility, malaria or other causes of a character purely constitutional.

But it is not my present intention to treat of the causes, nor of the pathological differences between the true and the spurious tic douloureux, nor of the still greater difference in the symptoms of the two diseases; but simply to give in detail the treatment of several cases of true tic douloureux, wherein the effects of lunar caustic will be described, and occasionally contrasted with the effects of other remedies employed in the same cases.

In the summer of 1844, Mr. J____, of Marshall County, Va., came to Wheeling, to obtain relief from an unusually severe attack of tic douloureux. He was about forty years of age; his occupation was that of a farmer, and his health good. The length of time he had been affected with the disease, I neglected to note down. The nerves involved were the first and slightly the second branch of the fifth pair. The paroxysms came on from touching the affected side—often while talking or eating—and very frequently without being provoked by either of the causes just named. The attacks were electric in their character, accompanied by sensations of a tic—a symptom never present, I believe, in ordinary neuralgia. The paroxysms were of about one minute's duration, occurring many times every day and night; and they were gradually becoming more exquisitely painful.

Treatment.—I extracted the first molar tooth, it being decayed, and perforated the antrum by way of an alveolar cell which led directly to this cavity. The antrum was free from disease. Upon touching the outer wall of the cavity with the end of a probe, particularly if the end of the probe were dragged over the surface, paroxysms of pain were instantly induced. After the bleeding subsided, I washed out the antrum with a syringe, first with warm water, and then with cold, and so, alternately, until I was convinced that warm water, in this particular case, had much agency in bringing on a paroxysm, and cold water as great an agency in allaying it. After the blood was thoroughly cleansed from the antrum, I threw into it, with a glass syringe, a solution of lunar caustic, (twenty-five grains to the ounce of water,) and there retained it for a few minutes, by plugging up the hole made in the jaw. The caustic had but little effect in any way. The next morning I increased the strength of the solution to fifty grains of caustic to the ounce of water. After taking up in the syringe about as much of the solution as the antrum would

hold—the patient being directed to hold his head in a horizontal position, with the affected side down; it was injected into the antrum, and the opening stopped as before. In a few minutes the patient complained, first of a slight pain on the top of his head—then all over the side of his head—then over the eye, and finally in the antrum. The plug was now removed, and the solution suffered to escape into his mouth, his mouth being effectually protected by holding in it a solution of common salt.

By this time the effects of the treatment were visible. The veins of the affected side, particularly along the temple, were distended and elevated to a remarkable extent; tears streamed from the eye; the flow of saliva was unusual; indeed, every secreting vessel of that side of the head appeared to be excited in the highest possible degree; yet the patient complained of but little pain, and that pain of a dull, benumbing description. The scalp, and indeed the whole side of the head upon which the first and second branches of the fifth pair of nerves are distributed, was sore to the touch; but the patient was entirely free from every symptom of tic douloureux. He was now allowed to return home, and directed to wash out the antrum with cold water once a day—to use the caustic injection once a week—and to return again in three or four weeks; which he did, and reported that he never had the slightest return of the disease after he left Wheeling. I saw him about five months since and he still remained well.

It was not until October 20th, 1846, that I had another opportunity of testing the good effects of lunar caustic in a case of tic douloureux. At that time Mr. Johnston, of this city, brought to my office an old gentleman by the name of C____, who stated that he had been very sorely afflicted with tic douloureux, for upwards of seven years; during which time he had been almost constantly under medical treatment, without any perceptible relief; that still his sufferings were so intolerable, he could not refrain from taking the medicine of every physician who would give him the least encouragement; and that he had now come to Wheeling for the purpose of getting the affected nerves divided, or to undergo any course of treatment that would promise relief.

The patient was about sixty years old—in excellent health—of slender form—intelligent and very communicative. He stated that in early life he had been a soldier—after which a surveyor—then a merchant—then a farmer—and then a victim to tic douloureux. He stated that he had always enjoyed good health; that the disease came upon him without any known cause; that the first symptom was an unpleasant twitching of his eyelid—then of the muscles of his face—then of a dull pain over his eye—and then, suddenly, the disease in full force. The paroxysms were electric in their character, usually preceded by and ending in numerous sensations of a tic. They were from half a minute to a minute in duration, and were repeated from fifty to a hundred times every twenty-four hours. The nerves most implicated were the first and second branches of the fifth pair; the second was more affected than the first, and I was not certain but that the third branch was involved also.

Treatment.—I perforated the floor of the antrum, and after examining into the condition of the cavity, and finding it free from disease, I washed it out well, first with cold and then with warm water. Both appeared to provoke paroxysms of pain, yet the warm water caused more severe paroxysms than the cold. I then injected the antrum with a solution of lunar caustic, of fifty grains to the ounce of water, after the same manner described in the first case. However, before I could get the hole well plugged in the jaw, a most fearful paroxysm of the disease ensued, which was soon succeeded by another, and another, until the poor old man was nearly exhausted. In about ten minutes, this fearful condition of things subsided. I then increased the strength of the injection to sixty grains to the ounce, and threw a portion of it into the antrum, and there retained it by a plug. Three or four slight paroxysms of pain took place within the first five minutes; then the patient began to complain of a sensation of heat in the antrum—then of pain on the top of his head, and along the temple and over the eye, particularly over the eye—and, finally, in the cheek. The veins along the temple were distended, as in the former case; the secretion of tears small—the conjunctiva of a bright pink color, and the flow of saliva not much increased. The plug was now withdrawn, and the solution allowed to run out, its effects being neutralized in the mouth by the use of salt and water. The patient now complained of a dull, heavy and distressing pain all over the affected side, and occasionally a slight sharp pain, something like tic douloureux; but this was all that was felt of the disease. The next day, the pain on the side of his head had subsided, there was much soreness of the scalp and temple—some congestion of the conjunctiva—a slight swelling of the cheek—and every now and then, a very mild sensation of his old complaint. The next day, the soreness of that side of his head was better; he had slept well, and eat without producing any return of his disease, except an occasional darting pain through the cheek. On the fourth day, the patient was still getting better; matter had begun to be discharged from the antrum. On the fifth day, still improving; has every now and then a sharp pain in his cheek, just in front of his ear, but of a comparatively mild character. I now injected his antrum with a solution of sixty grains to the ounce of water. Again he had pain all over the side of his head; again the conjunctiva became flushed, and the scalp sore to the touch; but every symptom of disease had vanished. He left town the following day, with a swelled cheek, a sore scalp, but with a light heart. He was directed to wash out the antrum every day, with water and a little soap—to use the caustic once a week—and to let me hear from him in two or three weeks. At the end of two months, his son called to say that his father still remained well; that he had occasional twitchings of the muscles of the affected side of his head, but no pain; and that, should the disease return, he would come to Wheeling immediately. He has never come, from which I conclude he still remains well.

The treatment of the next case of tic douloureux I have to lay before you, is of more interest, by far, than either of the preceding ones. The patient was one of our own citizens, and for the last fifteen years had been a perfect martyr

to the disease. You have all seen him, and many of you have doubtless prescribed for him. I mean old Mr. P____. He is now upwards of seventy-five years old, and never had any severe sickness until 1833. He was then taken with the cholera in a very severe manner, from which he recovered but slowly. After he had regained his health and strength to a very considerable extent, he experienced for some time, a singular, numblike sensation in his face, which was followed by true tic douloureux. He immediately applied to his physician, was treated very energetically and perseveringly, without benefit. He then placed himself under the care of another physician, without any better result, and then under the care of another, and then another, until every physician who would give the old man the least hope, had an opportunity of trying his skill. In 1838, I had the old gentleman under my care without being able to afford him any relief, save what was obtained by the division of the mental nerve. Thus did the patient suffer and doctor for fifteen years, but still he had tic douloureux, and that, too, in its worst form.

On the 26th day of February, 1847, he called at my office, and begged to have something done that would give him a little relief. He stated that the paroxysms of pain were greatly more severe and frequent than common; that he could not speak, eat, nor even touch his face, without bringing on the pain; that he was also suffering from asthma, and a cough; that the cough troubled him most at night, and that every time he coughed, a paroxysm of pain ensued.

The nerves involved were the first, second and third branches of the fifth pair. The first and second branches more than the third. The paroxysms were electric in their character, would continue from half a minute to two minutes, and occurred from twenty-five to one hundred and fifty times every twenty-four hours. The disease was always more severe in cold weather than in warm.

Treatment.—I perforated the floor of the antrum, and finding the cavity was free from disease, I injected into it a solution of lunar caustic of 50 grains to the oz. of water, and there confined it in the manner described in the former cases. In about a minute, a very severe paroxysm took place; soon after another less severe; and then another still more mild. About this time, the patient began to complain of pain on the top of his head, then along the temple and over the eye, and then in the antrum. The plug was now removed from the jaw, and the solution suffered to escape.

Feb. 27th.—The patient complains of a continuous pain all over the affected side of his head; some soreness; some sharp shooting pains, and every now and then, a severe spell of his disease, coming on generally after a fit of coughing. I examined his throat, snipped off a portion of the uvula—it being too long, washed out the antrum with cold water, and directed him to return next day.

28th.—The pain and soreness of the side of the head is much abated; uvula some swelled, and very sore; the paroxysms of tic douloureux much less severe and less frequent.

29th.—The patient about the same as yesterday.

March 1st.—No improvement. I now injected the antrum with a solution of lunar caustic of 60 grains to the oz. of water. In a few moments, the patient complained of pain on the top and side of his head, then of great heat in the antrum. Yet I continued to keep the solution stopped up in the cavity for fifteen or twenty minutes, and that, too, without materially increasing the pain in the temple and scalp.

2d.—Great soreness of the scalp, and along the temple; considerable swelling of the cheek; has no other symptoms of his complaint, except a ticking sensation, every now and then a twitching of the muscles, and occasionally a pain of an instant, darting from the front part of the ear over the masseter muscle, towards the corner of the mouth. Can eat and sleep well.

3d.—Soreness of the scalp, and swelling of the cheeks still continue, as do also the painless tic, and the darting pain in front of the ear. The antrum was washed out with cold water, which occasioned much aching in the jaw.

4th.—Patient about the same as yesterday. Washed the antrum with warm water, without causing any unpleasant sensation.

6th.—Soreness of the scalp and swelling of the cheeks subsiding; matter discharging from the antrum; still feels the tic in the cheek, and still has the sharp pain over the belly of the masseter muscle. Injected the antrum with warm water.

9th.—Done nothing for the last three days, save injecting the antrum with warm water. Soreness and swelling of the cheek and scalp completely disappeared; still the patient feels the tic, and the darting pain. But the tic and pain are not felt in the same region of the face. In this way the case remained, without any further improvement, although the same treatment with caustic, as before described, was repeated twice up to May 20th. On this day, the patient had a slight return of his disease; although not so severe or frequent as formerly, yet he was amazingly alarmed. I now tried creasote in the antrum, of various degrees of strength, but without any effect. I then gave morphia a fair trial, by injecting a solution into the antrum, without producing any other effect than putting the old man very fast asleep upon two or three occasions. I also tried belladonna in the same way, without producing any other effect than enlarging the pupil enormously, and keeping it so enlarged for nearly two days. I also tried several other articles that had some reputation in relieving tic douloureux, but all to no purpose, except the spts. turpentine and ammonia. This appeared to have a good effect, but the effect would soon pass off, and the disease return in full force.

June 4th.—The severity of the disease is increasing. I now blew into the antrum from a glass tube, twenty-five grains of pulverized lunar caustic. Again the scalp became sore, and the face swelled; but all symptoms of the disease at once subsided, save the tic and the darting pain over the masseter muscle.

7th.—The patient still remains free from every symptom of the tic douloureux, except the darting pain in front of the ear. I now made an external application of the caustic, about two inches broad, extending from the ear to the corner of the mouth.

9th.—Has not had the slightest pain of any description in his cheek since the application of the caustic. Still the tic continued, and I was unable to remove this sensation by any course of treatment I could adopt. In this way the patient remained for five months. Then upon a warm day in the month of November, after much exercise, the patient seated himself in a hall, and fell asleep; upon waking, he had a stiff neck and shoulder; in short he had taken cold. On the following day, he had two or three pretty severe paroxysms of tic douloureux. He now called upon me again. I again blew into the antrum from a glass tube, thirty grains of pulverized lunar caustic, and plugged up the hole in the jaw. I also applied the caustic over the cheek as before. The cheek now became much more swollen than upon former occasions. The soreness of the scalp was also far greater, as was the pain upon the side of the face. The next day I washed out the antrum with salt and water. In a few days the swelling of the cheek went down, and the patient was again entirely free from all symptoms of the disease, except that mysterious tic—it still continued. And in that condition he remains to this day.

I have now related the treatment of three cases of tic douloureux, wherein the use of lunar caustic, so far as it is possible to determine, has effected cures. I will now give you a case wherein this same remedy failed to a certain extent.

About six weeks since, Mr. Mc____, of Pa., called on me with tic douloureux on the right side of his face; he had been affected with it for several years; thinks the disease was occasioned by a severe cold. The nerves involved were the first, second and third branches of the fifth pair; the third more than the first or second. In this particular, this case differed from all the preceding ones. After perforating the antrum, and treating the case after the same manner I treated Mr. P____, the pain in the first and second branches subsided entirely; but there was little if any improvement in the condition of the third branch. This patient, however, was only under treatment five days before he left the city. I have since learned that he was not benefited by the treatment in the slightest degree. This case does not, in my opinion, detract from the value of lunar caustic in the least, as a remedy for the cure of tic douloureux; it only shows that in cases where the third branch is involved, the caustic, to prove effective, must be applied to parts different from those I have usually selected.

I will now close my report of cases in which I have used lunar caustic, with one differing very materially from all the rest.

Mrs. C____, of Short Creek, in this county, was taken sick about the first of February last. Soon after the commencement of her sickness, she had a fearful spell of flooding, leaving her unable to arise from her bed for several weeks. During this sickness, she often experienced a great aching in the back part of her neck, close to the base of the skull. At last her head had to be arranged with great care upon the pillow, to avoid this kind of suffering. About two weeks after she first felt this pain, she was suddenly attacked with tic douloureux along the temple, and over the eye. The pain was of the most intense character. She was treated by her physicians with tonics, blisters,

morphia, and a host of other remedies, for two months and a half, with but little if any relief. She was finally brought to Wheeling. I found, by pressure over the first cervical vertebra, great soreness; and by pressure on one particular spot, pain in the temple was instantly produced. I now applied lunar caustic over the painful region of her neck very freely. Next day she complained very much of the soreness occasioned by the caustic, but the pain in the temple and neck was not so frequent, nor half so severe. I now applied caustic over the brow, and along the temple. The next day she was entirely free from all pain of a neuralgic character, and so she still remains.

I must not neglect to mention, that when she came to Wheeling, she was taking quinine and iron. These remedies I continued, except that I gave her the wine of iron, in place of the sulphate of iron, which she was then taking.

In conclusion, I have only to add, that all of the deductions that might be drawn from the history and treatment of the cases just reported, I leave entirely to the members of the society.

WHEELING, OCT. 10TH, 1848.

CASE OF ELONGATION OF THE UNDER JAW AND DISTORTION OF THE FACE AND NECK, CAUSED BY A BURN, SUCCESSFULLY TREATED. Reported, with cuts, by Dr. S. P. Hullihen, Wheeling, Va. Am. J. Dent. Sc. 1st Series **9**: 157-165, 1849.

Miss Mary S----, aged 20, daughter of the Hon. Wm. S.----, of Ohio, came to Wheeling in the spring of 1848, to obtain relief from the effects of a very severe burn, which she had received fifteen years before.

The burn was principally confined to the neck and lower part of the face, and its cicatrix produced a deformity of the most dreadful character. Her head was drawn forward and downward—the chin was confined within an inch of the sternum—the under lip was so pulled down that the mucous membrane of the left side came far below the chin—the under jaw was bowed slightly downward, and elongated, particularly its upper portion, which made it project about one inch and three-eighths beyond the upper jaw. In front there was scarcely any appearance of either chin or neck; she was unable to turn her head to either side; the cheeks and upper lip were dragged considerably downward; she could not close her eyelids; she could not close her jaws, but for an instant, and then only by bowing her head forward; she could not retain her saliva for a single instant, and, as might be expected, her articulation was very indistinct.

She had been taken to the city of New York, some years before, for the purpose of being relieved of this deformity, and was placed under the care of two of the most distinguished surgeons in that city, who performed an operation by dissecting up the cicatrix on the neck, then raising the head, and sliding up the cicatrix from its original position, leaving a raw surface below to heal up by granulation. I need scarcely add that the operation was entirely unsuccessful.

After a careful examination of the case, it became evident that such a complicated deformity could be best remedied by performing three separate operations: one upon the jaw; another upon the neck; and a third upon the under lip.

To remove the projection of the under jaw seemed to require the first attention. Unless that could be done, the other operations, however successful, would add but little if any to the personal appearance of the patient. This lengthening of the jaw had taken place entirely between the cuspidatus and first bicuspid tooth of the right side, and between the first and second bicuspides of the left. By this elongation, the teeth just described were separated on both sides about three-fourths of an inch. To saw out the upper edge of these elongated portions of the jaw, and then to divide that part of the jaw in front of the spaces thus made, by sawing it through in a horizontal

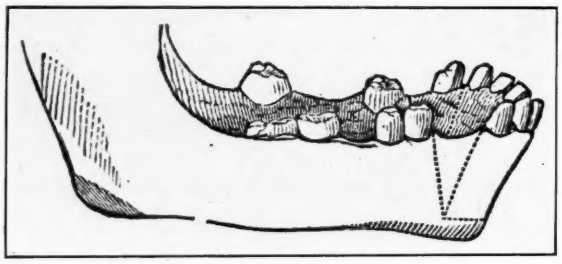


Fig. 16.

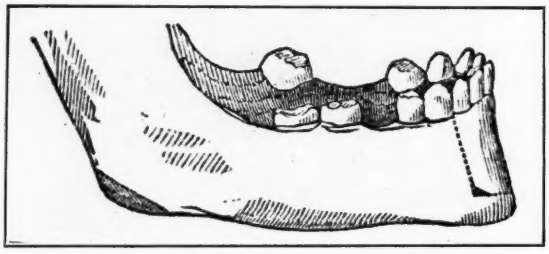


Fig. 17.

manner, so as to permit the upper and detached portion to be set back in its proper and original position, appeared to be the only possible way of remedying the deformity. This plan I therefore adopted, and performed the operation on the 12th day of June, in the manner now to be described.

The operation was commenced by sawing out, in a V shape, the elongated portions, together with the first bicuspid on the left side, each section extending about three-fourths of the way through the jaw. I then introduced a bistoury at the lower point of the space from which the section was removed on the right side, and pushed it through the soft parts, close to and in front of the jaw, until it came out at the lower point of the space on the left side. The bistoury was then withdrawn, and a slender saw introduced in the same place, and the upper three-fourths of the jaw, containing the six front teeth, was sawed off on a horizontal line ending at the bottom of the spaces before named [see Fig. 16], the detached portions being still connected, on the outer

and inner sides, to the jaw below, by the soft parts. After having, with the bone-nippers, removed from the detached portion the corners which were created by the horizontal and perpendicular cuts of the saw, it was set back so that the edges, from which the V shaped sections were removed, came together, as represented in Fig. 17.

Thus it will be perceived that this portion of jaw and teeth, which before projected and inclined outward, now stood back and inclined inward, and in its proper and original place.

In this position the jaw was secured, by passing ligatures around the cuspidati in the detached portion, and the now adjoining bicuspides in the sound portion. Then taking an impression of the jaw in very soft wax, a cast

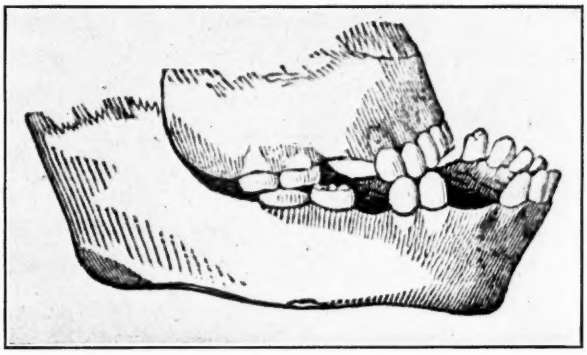


Fig. 18.

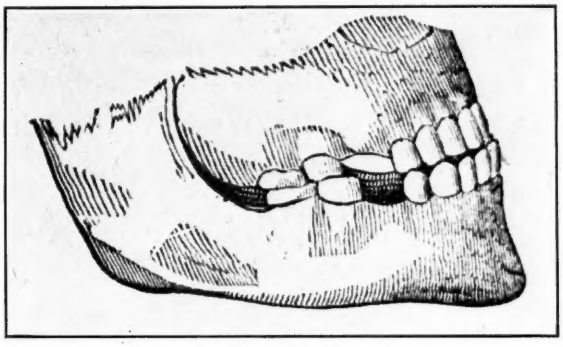


Fig. 19.

was procured, and a silver plate struck up and fitted over the teeth and gum, in such a manner as to maintain the parts in that same relation, beyond the possibility of movement.

The patient declared that the operation gave her little or no pain. There was a little swelling about the chin during the first three days after the operation, but not the slightest uneasiness. In this way the case progressed; the gum healed in a few days; the jaw united strongly, and in the same time bones usually unite; and the wearing of the plate was discontinued within six weeks after the operation was performed. (Fig. 18 represents the manner of closing the jaw before the operation. Fig. 19 after the operation.)

The deformity of the jaw being now removed, the next thing to be done was to relieve the confined condition of the head, and the distortion of the

face and neck resulting therefrom. This I determined to accomplish, if possible, after the manner of Prof. Mutter in similar cases; and I accordingly performed this operation on the 31st day of July, assisted by Dr. Frissell.

I began by dividing the skin immediately in front of the neck, about half an inch above the sternum—and then carried the incision back about three inches on each side. I then commenced a careful division of the strictures, which were so thickened in front as to extend to the trachea, and on the sides, as not only to involve the platysma-myodes, but a portion of the sterno-cleido-mastoideus muscles also. After dividing every thing that interfered with the raising of the head, and the closing of the mouth, so far as the incision was now made, it became evident that, to give free motion to the head, the incision on the neck must be extended back through the remaining cicatrix, which was at least two inches wide on one side, and about an inch and a half on the other; this was accordingly done, the whole presenting a wound upwards of nine inches in length, and nearly five in width. A thin piece of leather was now cut in the shape of the wound, but somewhat larger, and placing it upon the shoulder and arm, immediately over the deltoid muscle, a flap nearly ten inches in length, and five in breadth, having a neck or attachment two inches wide, was marked out and then dissected up as thick as the parts below would permit. This flap was now brought around, and secured in the wound on the neck by the twisted sutures; the sutures were placed about an inch and a half apart; between each of these sutures, one, two and sometimes three small stitches were inserted, depending entirely upon the number necessary to bring the edges neatly together. These stitches were of fine thread—had a very superficial hold, produced little or no irritation, and served to keep the parts in better apposition than any other means I could have devised. The wound on the shoulder was next drawn together about one-half of its entire extent; the remainder was covered with lint. One long narrow strip of adhesive plaster, applied around the neck to support the flap, and over this a cravat tied in the usual way, constituted all the dressing deemed advisable at this time.

The patient bore this tedious and very painful operation with great fortitude, and without uttering scarce a murmur. She was somewhat exhausted, but not from the loss of blood; there was no vessel divided of sufficient importance to require a ligature.

August 1st.—During the fore part of last night the patient was somewhat distressed—was very unmanageable—would talk incessantly, and occasionally sat up in bed. An anodyne was administered at 12 o'clock, after which she rested much better, and slept some. Complains of sickness of the stomach this morning—has vomited three or four times; flap very pale; pulse rather weak. Patient directed to refrain from taking all kinds of drink.

2d.—Patient complains of pain only in the shoulder; was much distressed the latter part of last night on account of a retention of urine. The catheter was employed, and about three pints of urine drawn off, after which she rested well. Pulse somewhat excited; flap better color.

3d.—The patient rested well last night—the use of the catheter still necessary. All efforts to keep the patient from talking and moving unavailing; color of the flap rather pale, save at the extreme point, and about two inches along the lower edge, which is assuming rather a dark blue color; pulse about the same as yesterday. Removed a pin from near the point of the flap, and enveloped the neck in cotton batting. Patient complains of hunger—chicken broth ordered.

4th.—Patient rested well; the use of the catheter still necessary; complains of slight head-ache; the color of the flap nearly natural, and even the

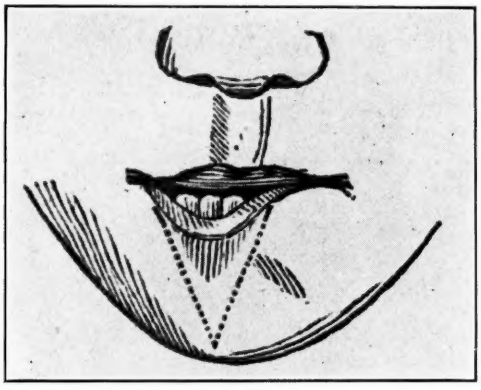


Fig. 20.

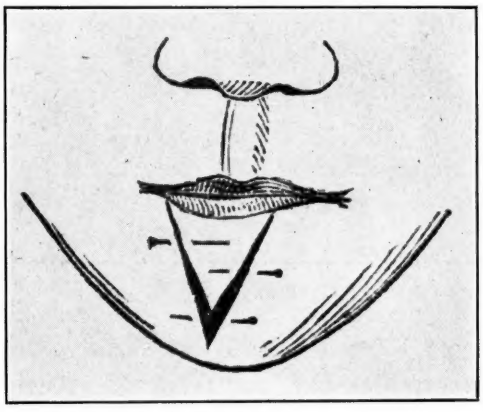


Fig. 21.

point is assuming a healthy hue, and appears to be uniting; pulse almost natural.

5th.—Urinates without difficulty; bowels moved by injection; patient entirely free from pain; pulse natural.

6th.—Dressing removed; the flap is uniting by the first intention, along both sides, throughout its entire extent; the greater part of the pins and stitches removed.

7th.—The remainder of the pins and stitches removed; patient perfectly comfortable and cheerful.

10th.—Sat up all day by the window.

15th.—Walked out to take an airing.

During the whole progress of the cure there was not the slightest swelling or undue inflammation in the flap or about the neck. The patient was slightly hysterical the first few days, but never complained of anything except pain on the shoulder, a slight head-ache of a few hours' duration, and the uneasiness occasioned by the retention of urine. The wound on the shoulder granulated rapidly and skinned over in about six weeks after the operation. It was curious to observe that upon touching the flap after it had healed in the neck, the patient would always refer the sensation to the shoulder or arm from which the flap was taken.

The confinement of the head and distortion of the face occasioned by the strictures, being now removed, the next step was to relieve, as far as possible, a very great deformity of the under lip.

Fig. 22*A*.

The under lip, from being dragged down and greatly stretched by the former projection of the under jaw, was rendered greatly too large—so much so that it pouted out an inch or more further than the upper lip. This, together with a turning out of the mucous membrane on the left side, which extended nearly down to the lower edge of the chin, making the lip too short on that side, was the nature of the deformity yet to be relieved.

To relieve this unseemly appearance of the lip, the inverted portion was cut out in a V shape, extending down to the flap in the neck, and sufficiently large to reduce the lip to the proper size. The edges were then brought together and secured after the manner of a single hare-lip. The wound healed in the most beautiful manner—the appearance of the lip was greatly improved, but still there remained a deep depression or notch in the edge, sufficiently large to keep exposed the tops of two or three teeth, besides preventing the coming together of the lips on that side.

I now determined to raise, if possible, this depressed portion of the lip, and for this purpose passed a bistoury through the lip, about two lines from the free edge, first on one side of the depression, and then on the other, and then carried the incisions downward, to meet at a point on the lower edge of the chin, as represented in Fig. 20.

The depressed portion of lip now lying between the two incisions was next dissected loose from the jaw, and then raised on a level with the remainder of the lip, and there retained by pins, after the manner of dressing a double hare-lip—the line of union forming the letter Y. [See Fig. 21.]

This operation was as successful as the other, and the original deformity being now removed, the young lady, though still carrying evidences of the burn, has the free use of her head, eye-lids, jaws and lips, and may mingle in

Fig. 22*B*.

society without particular note or remark. (Fig. 22*A* represents the patient before either of the operations were performed; Fig. 22*B*, her appearance three weeks after the last operation.)

(The drawings of the first four cuts, accompanying this report, were procured through wax impressions of the mouth, and are therefore exact representations of the position of the teeth, and the manner in which the jaws closed together. The drawings of the last four cuts were taken from Daguerreotype likenesses. The Daguerreotype process, it is well known, reverses the sides of the face, and having neglected to direct the attention of the engraver to this fact, these cuts, though sufficiently faithful to give a very correct idea of the case in all other respects, represent the right for the left side of the face.)

WHEELING, JANUARY 8TH, 1849.

OBSERVATIONS ON SUCH DISEASES OF THE TEETH, AS INDUCE FACIAL NEURALGIA, OR TIC DOULOUREUX. By Dr. S. P. Hullihen. Dent. Register **3**: 64-70, 1850.

That facial neuralgia sometimes occurs from debility, malaria, and such like causes of a constitutional nature, cannot be denied. But that this disease more frequently occurs from some local exciting cause, either about the jaws or teeth, I think can be most clearly demonstrated; and when well understood, often enables the practitioner to search out and to remove the cause of the disease at once, and thereby to effect a cure that he might otherwise vainly endeavor to effect for days and weeks, by any course of general medication.

In treating of this subject I do not hope to remove the cloud of mystery that for ages has hung over the true nature of this disease; neither do I pretend to have discovered causes that have never before been described. But I simply hope to be able to point out such diseases of the teeth as are most prone to induce facial neuralgia, and then to describe the symptoms and appearances which attend such diseases.

Facial neuralgia sometimes arises from the exposure of the nerve or pulp within the internal cavity of a tooth, sometimes from the absorption of poisons, such as arsenic, when placed within the carious cavity of a tooth for the purpose of effecting the destruction of the nerve—sometimes from the absorption of acrid matter, which may be engendered in a carious cavity of a tooth—sometimes from the pressure of a plug upon the nerve of a tooth—sometimes from exostosis, either upon the apex of a root of a tooth, or within its internal cavity.

It also may arise from other local exciting causes, situated in certain parts of the face and head, such as an accumulation of matter in the antrum maxillare—from polypi or other growths within this cavity—from tumors of different kinds elsewhere about the jaws—or upon the internal surface of the skull—and even from diseases in the substance of the brain itself. But such causes are found to exist but rarely, when compared with those that arise from the teeth. However, the disease arising from any other cause than those of the teeth, cannot be properly considered in the limits proposed in this paper.

Although facial neuralgia may originate from any one of the molars or bicuspids, in either jaw, and occasionally even from the cuspidati and incisors, if the patient be greatly predisposed to neuralgic affections; yet the disease originates with the dens sapientiae or wisdom tooth of the lower jaw, at least seventy-five per cent. oftener than with any other tooth in the mouth. The second molar of the under jaw is the tooth next most frequently implicated—then the first molar, and so on. All the teeth of the lower jaw are more prone to produce neuralgia than those of the upper, and strange as it may appear, the bicuspides of all teeth in the upper jaw are found most frequently to produce the disease. The next tooth of the upper jaw most frequently implicated is the first molar—then the second molar—but the third, or wisdom tooth of this jaw is rarely, if ever, the seat of this complaint. Thus in searching after the cause in any case of facial neuralgia, the wisdom tooth of the lower jaw should be first thoroughly examined—then the second molar—

then the first—and then the bicuspides of both jaws—then the first molar of the upper jaw, "and so on on back to the beginning." Should no cause of the complaint be found in the teeth, then the other locations before mentioned should be carefully examined, or inquired into; and lastly, the true condition of the patient's general health.

To detect the several diseased conditions of the teeth that may induce facial neuralgia, required some experience, and much close observation. Yet in the great majority of cases, each diseased condition will be found to have its own peculiar characteristics sufficiently well marked to make its discovery quite certain. Though some of the conditions may not be found upon the first, second, or even the third examination, (indeed, they may never be discovered unless the examination be properly conducted, and with the most untiring patience,) yet each and every careful exploration will most likely lead more and more near to the true seat and nature of the disease, until both become fully revealed.

The several diseases of the teeth that may give rise to facial neuralgia, the various symptoms, and the pathological condition of each disease, I will now endeavor to describe.

I have before remarked that diseased teeth in the under jaw were more likely to produce facial neuralgia than those in the upper. This of course depends upon anatomical relations. Then again, that with the wisdom teeth of the lower jaw, the disease originated more frequently than with all the rest of the teeth in the mouth. This depends partly on the great proneness of this class of teeth to decay, but more particularly upon the proximate relations of these teeth to the great branch of the inferior maxillary nerve, and the Gasserion ganglion. The cause of the disease originating with the upper bicuspides more frequently than with any other teeth of the upper jaw, cannot be so satisfactorily explained; perhaps it may be attributed to the more frequent decay of this class of teeth than of any other save that of the first molars, if indeed they are even entitled to the exception.

The exposure of the dental nerve is a very common cause of facial neuralgia, and the disease, when left to run its course, generally subsides upon the suppuration of the nerve. At first the pain is greatly aggravated by any foreign or irritating substance getting into the carious cavity, at the same time the seat of the painful sensation may be more or less remote from the tooth or nerve so irritated. Then again the pain may be located for a few moments in the affected tooth—then it may dart away into the ear, temple, and scalp—or first into one tooth and then into another—and then into all the teeth of both jaws on the affected side—and then in an instant to other associated parts. But there is always uneasiness enough in the proper tooth to indicate the seat and cause of the complaint.

If such a tooth be extracted and examined, the nerve may be found in any intermediate state, from a slight inflammation, up to the suppurative process, depending much upon the violence and duration of the complaint. In such cases, upon the extraction of the tooth, the neuralgia disappears.

The most fearful cases of facial neuralgia sometimes arise from the absorption of arsenic; an article which of late years, has been much employed for the purpose of destroying the nerves of painful teeth. In all cases where the dental nerve is freely exposed, arsenic may be used without danger of producing neuralgia; but in cases where there is only tenderness in the bone of the tooth, or where there exists but a small fissure, leading from the bottom of the carious cavity to that of the nerve, if arsenic be applied, in a few hours more or less of it will be absorbed, the nerve becomes inflamed, and a most painful case of neuralgia will be the result.

Yet in such cases, the tooth may be no more involved in the paroxysms of pain than any other tooth on that side of the head. But if the tooth be extracted, and the nerve examined, it will be generally found in a high state of inflammation, a kind of inflammation, too, that I have never known to run into suppuration.

After such a tooth is extracted, the neuralgic pains will frequently continue for days and weeks before they finally subside.

Facial neuralgia not unfrequently takes place as though it originated from the absorption of acrid or poisonous matter, engendered in the carious cavity of a tooth. In such cases the disease may exist for a long time without the affected tooth being suspected as the cause—however, when the patients' attention has been once directed to the teeth, they will generally discover that the paroxysms of pain occur more frequently, and tarry longer in the affected tooth than in any other on that side of the head. I say any other tooth, for it should not be forgotten that in facial neuralgia, let it originate from whatever cause it may, all the teeth on the affected side are liable at times to be more or less involved in the pain, and this painful sensation may be continually changing from one tooth to another, to the sound as well as the diseased. This condition of things exposes the patients very often to have the wrong tooth extracted, and whenever a mistake of this kind is once made, both patient and practitioner are very apt to conclude that all the pains in the teeth are deceptive, and that the true cause of suffering springs from some other source.

If a tooth affected in the manner just described, be extracted and examined, the nerve will be found involved in a low grade of inflammation, chronic of course, and one that is not likely to run very speedily into suppuration.

Whenever a tooth affected in this way is extracted, the neuralgia either immediately subsides, or begins to decline, and will finally disappear in a few days.

Facial neuralgia very frequently takes place from the confinement of matter within the internal cavity of a tooth. The nerve of a tooth very often suppurates from the irritation it receives from the near approach of caries, from fractures, or from the pressure of a plug, and like causes, when in fact the nerve itself is in no way laid bare. The matter in such cases being prevented from escaping through an opening in the crown of the tooth, as it al-

ways does when any such opening exists, soon begins to ooze out through the foramen in the apex of a root, and neuralgia to a greater or less extent is the consequence.

The first symptoms attending a tooth about to be affected in this way, is pain, whenever hot or cold fluids pass over it—soon the tooth begins to be sore to the touch, and appears a little loose, and longer than the rest. About this period, some slight neuralgic pains usually commence to dart along the course of the nerves to the temple, ear, and the side of the head, and to the teeth of both jaws. The pains gradually become more and more severe until an abscess forms, which is the most usual way for this affection of the teeth to terminate. From the very first, the soreness of the tooth will always indicate the seat and true cause of the complaint.

If a tooth affected in this way be extracted and examined at an early stage of the complaint, the nerve will be found suppurating at the point most exposed to irritation. If later, the entire nerve may be destroyed, and still later, a small sac may be forming, or already formed upon the apex of the fang most implicated.

In all such cases the neuralgia subsides immediately upon the extraction of the teeth.

The very worst forms of facial neuralgia very frequently arise from dental exostoses. This deposit of bony matter may attack the roots of teeth either externally or internally. If externally, it forms upon the apex of the root. If internally, it forms in the nerve canal of a fang, either in teeth where the entire crown is worn away, or when the same kind of action is induced at the neck of the tooth, from the absorption of the gum and alveolar process. The external formation upon the apex of the root, or the internal at the neck of the tooth, are the only deposits, so far as I know, that ever give rise to facial neuralgia. The deposit that takes place upon the wearing away of the crown of a tooth, often prevents, but never, I believe, causes pain. Dental exostoses sometimes attack the roots of teeth which, to all appearances, are perfectly sound; it however much more frequently forms upon the roots of teeth that are diseased.

The existence of this disease is often extremely difficult to detect. Whenever it is located upon the apex of a root, a pretty sharp blow upon the tooth with a small but heavy instrument, will most generally bring on a paroxysm of pain, and thus discover the seat of the disease. But to effect this, it is necessary that the blow should be made in such a way as to make the growth produce an increased, as well as a sudden irritation. Thus if the growth is deposited around the point of the fang, the blow should be made on the face, or masticating surface of the tooth. If upon one side of the root, the blow must be given upon the side of the crown, and on the same side that the growth may be located on the fang. If the growth be situated within the internal cavity of a tooth, then it is determined with still greater difficulty. But if the gum and alveolar process have been absorbed to a considerable extent from about a tooth, and that tooth situated where it is likely to produce neuralgia,

and if very cold, or very hot water taken into the mouth provokes paroxysms of pain, such indications are always sufficient to warrant the extraction of the tooth.

If roots of teeth affected with exostosis externally, be examined, the nerve will sometimes be found in a healthy state, at other times perfectly destroyed. The growth may vary from the least perceptible enlargement, to that of a small rifle ball. If internally, the canal will be more or less filled up a little above the neck of the tooth, and the nerve will in such cases have the appearance of being too small for the remainder of the canal.

Facial neuralgia arising from exostosis, quickly subsides upon the removal of the cause, and I need scarcely add, that this can only be done by the successful removal of the affected root.

But it may be asked, have you not confounded facial neuralgia with common tooth-ache. I answer, in all cases where the greatest amount of suffering is confined to one tooth alone, I call that tooth-ache, without any reference to the cause. But where a tooth is but slightly implicated in pain, where the pain is greatest in the face, temple, or scalp, and where it occurs in paroxysms, or is periodical, I call that facial neuralgia, let it arise from whatever cause it may. The same cause, in kind that may produce only tooth-ache in one individual, in another may occasion all the horrors of facial neuralgia.

WHEELING, JAN. 10TH, 1850.

DRS. HULLIHEN AND ROBINSON ON ODONTALGIA. Dental Register **3**: 79-82, 1849.

In an article on alveolar abscess, published in the July number, volume second, Dental Register, we took occasion to refer to the classification of Odontalgia, as given by Dr. Robinson in his work on the teeth, published 1846. The following is the extract we then made. "Mr. Robinson, in speaking of Odontalgia, gives the following classifications: 1st, Inflammation of the Dental nerve; 2nd, fungus of the pulp; 3d, confinement of matter in the internal cavity of the tooth; 4th, disease of the periosteum; 5th, sympathy. In inflammation of the nerve or pulp, the pain is sharp, lancenating and throbbing, and is not increased by pressure on the part."

In tooth ache, originating from the confinement of pus in the dental cavity, "pain is felt only at first when hot or cold liquids pass over the tooth; but gradually a steady gnawing pain supervenes." He then goes on to say, "that when a tooth first grows painful in this way, that it is about to suppurate; when it appears longer than the rest, loose, and exceedingly sore, the nerve has suppurated, and the pus is already oozing from the end of the fang, where the vessels and nerve enter. When the cheek begins to swell, it is a sign that the matter is spreading between the alveolus and its lining membrane, which occasions the throbbing pain felt during the formation of Alveolar Abscess."

When the article on Alveolar Abscess was penned, we had forgotten the fact that Dr. Hullihen, in 1839, in volume 1, No. 4, *American Journal of Dental*

Science, published an article on Odontalgia, and that he made the same classification of the disease, and what is equally worthy of remark, uses throughout the entire article, much of the same language which is, years after, employed by Dr. Robinson.

The extract is then due to Dr. Hullihen, and to place the affair in its proper light, we shall give several extracts from both, and let our readers judge of the extent of similarity. Having alluded to the article as we did, we feel it due to Dr. Hullihen to thus show to whom credit belongs.

Dr. Hullihen's Classification

1st, Tooth ache from exposure of the nerve.

2d. From fungus of the nerve.

3d. From confinement of pus in the internal cavity of a tooth.

4th. From a diseased state of the periosteum covering the fang.

5th. From sympathy.

Tooth ache, from the confinement of pus in the internal cavity of a tooth, occurs more frequently than any other variety, except from exposure of the nerve. At first the tooth is painful, only when hot or cold fluids pass over it, and may continue in this situation for some time. At length, a steady, gnawing pain supervenes, and then the tooth begins to get sore, and appears a little loose and longer than the rest. About this period, the pain assumes a very different character, darting from the tooth along the courses of the nerve, to the temple, ear, and side of the head, and to the teeth of both jaws on that side; within twenty-four hours the face begins to swell, and the pain changes to one of a constant throbbing description,—symptoms which indicate that an alveolar abscess is forming. When a tooth in the manner described becomes painful, the nerve is about suppurating;—when it appears longer than the rest, loose, and is very sore, the nerve has suppurated, and the pus is beginning to ooze out at the extremity of the fang, where the vessels enter, producing much pressure, hence the sharp darting paroxysm.

When the cheek begins to swell, the matter is effusing between the alveolus and its lining membrane, and occasions the throbbing pain, which always accompanies the formation of an alveolar abscess.

The true abscess of the antrum maxillare originates in like manner, from the same cause, when the fangs are very near, or penetrate into the cavity.

Dr. Robinson's Classification

Exposure of the Dental nerve, from fungus of the pulp, from the confinement of pus in the internal cavity of a tooth.

From disease of the membrane covering the fang, (periosteum,) from sympathy, & c.

Next after tooth ache, arising from exposure of the nerve, that which depends upon confinement of pus in the dental cavity, is the most frequent. In the commencement of these cases, the pain is felt only when hot or cold liquids pass over the affected tooth; but gradually a steady gnawing pain supervenes, the tooth becomes sore and tender, seems a little loose and longer than the other, and pain darts from it along the nerves to the temples, the ear, the side of the head, and to the neighboring teeth in both jaws. When a tooth first grows painful in this way, it is about to suppurate; when it appears longer than the rest, loose, and exceedingly sore, the nerve has suppurated, and the pus is already oozing from the end of the fang, where the vessels and nerve enter.

When the cheek begins to swell, it is a sign that the matter is spreading between the alveolus and its lining membrane, which occasions the throbbing pain felt during the formation of Alveolar abscess.

It is by the same process, when the fang of a diseased tooth is near the antrum, that true abscess of that cavity takes place.

Pain, however, may exist, the nerve may suppurate, and the face swell, and both the pain and swelling again subside, without the formation of abscess; in which case the matter insinuates itself between the end of the fang and its membraneous coverings, then forming a sac about the size of a pea, or a little larger; in the course of time, this sac will burst, and discharge its pus between the fang and the alveolar process.

Dr. Robinson, in speaking of fungus pulp, says: It "is a small tumor of a deep red

There is now and then a case that differs materially from the general progress of this disease. The nerve may suppurate, and the face swell slightly, and both pain and swelling subside without the development of an abscess; when this occurs, the matter is insinuated between the end of the fang and membrane covering it, forming a sac about the size of a pea, and sometimes larger, which may be felt distinctly in the gum opposite the end of the fang; by pressing on it, a fullness or sensation of pressure is felt in the tooth, but in time, this sac will burst, and an alveolar abscess will be the final result.

In speaking of fungus of the nerve, Dr. Hullihen uses the following language: "It is of a deep red color, very soft, bleeds freely upon the slightest touch, is sometimes totally insensible; at others, highly sensitive, giving much pain of an incessant character." And again he says, "it varies in size from that of a pin's head to a pea and larger."

color, either in the canal of the fang, in which case it is so minute as to be often mistaken for a nerve itself, or else in the cavity of the crown, which it generally fills, when it is present there. It is very soft, bleeds freely on the slightest touch and varies in size from a pin's head to a large pea. Sometimes it is quite sensitive; in other cases exquisitely sensitive."

The above extracts will suffice. More might be given, but enough is given to show a very close resemblance. It would be natural, after reading both to suppose that Dr. Robinson had just been reading Dr. Hullihen's article before he penned his own, or that he had neglected to give to Dr. H. proper credit.

The subject of Odontalgia and Alveolar Abscess, is one of far more importance than many appear to suppose. No disease in the aggregate, gives more pain, and yet but few Physicians or even Dentists treat it understandingly.*

(J.T.Cin.Ed.)

Fungus Growth of the Pulp From Vicarious Menstruation. Forceps **1**: 166-174, 1844.

Mr. S. P. Hullihen mentions the following case in the *American Journal of Dental Science.* Some time since, a young lady about seventeen years of age applied to me with a growth of this kind, in each of the second molares of the under jaw, which had assumed rather a novel character. She stated that the fungi had made their appearance in both teeth at the same time, about four years before, and that for the last two years she had been much troubled with a bleeding from them, which occurred regularly once a month and continued several days. She being anxious to have the teeth saved, I destroyed, to all appearance, the morbid growth, and plugged the teeth. In a few days they became sore and painful; the plugs were removed, and a slight bleeding commenced, which continued for three or four days, and then the tumors entirely disappeared. I was therefore induced to plug them again; but in about three weeks the teeth became sore, the plugs were removed, and a bleeding ensued as before. I now suspected it to be a *vicarious menstruation,* which it proved to be, and mentioned the case to the family physician. At his re-

quest I plugged them again, and the result was precisely the same as before. The teeth were then removed, and the patient was put under a course of treatment by her physician which effected a cure.

ESSENTIALS OF ORAL SURGERY. By Vilray Papin Blair and Robert Henry Ivy, 1923, The C. V. Mosby Co., St. Louis, Missouri.

On pp. 161, 162, and 163 we find the following description of Dr. Hullihen's continuous dental splint:

Dr. Hullihen, a dentist, of Wheeling, West Virginia, described a continuous dental splint which he had constructed for a case of resection of the alveolus, which has since often been used for the treatment of interdental fractures of the body. It may be made of metal or vulcanite, celluloid or hard rubber, and is modeled over a plaster or metal reproduction of the dentures. The splint is supposed to fit accurately, and is cemented into place. Such a splint may include all of the teeth in the arch or an adequate number on each side of the fracture.

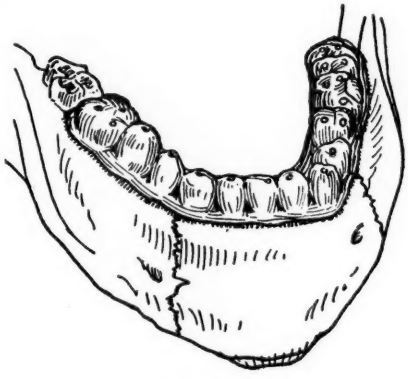


Fig. 23.

Splints of this type were formerly swaged over dies made from casts of the lower teeth, the metals used being usually gold or German silver. At the present time they are generally cast in silver or aluminum, with a saving of time and greater accuracy in fit.

Effective splints of the Hullihen type have this advantage over wiring the jaws together—that they allow movement of the jaw almost throughout the treatment, thus permitting mastication of solid food, but they are applicable only in cases of interdental fracture, with firm teeth in each fragment. Even with sound teeth in each fragment, where there is much tendency to displacement and the fragments are not easily reduced and held reduced, fixation of the lower teeth to the upper is preferable.

In cases where there is loss of substance through the entire thickness of the mandible, or where there is a gap involving loss of several teeth, a modification of the Hullihen type of splint may be employed, consisting of swaged or cast caps covering the teeth of each fragment, the two sides being connected by a bridge or bar of metal crossing the gap.

ORAL DEFORMITIES. By Norman W. Kingsley, 1880, D. Appleton & Company, New York.

On pp. 223-226 we note the following text, concerning an obturator which Dr. S. P. Hullihen had reported:

Dr. S. P. Hullihen describes in the *American Journal of Dental Science* an obturator which he constructed for a case where the velum was lost by disease. He says:

"An artificial palate made upon this plan will be composed of four parts: 1, a valve, made from gold plate, as thin as it can well be worked; 2, a spiral spring about an inch long, and of the size usually made for whole sets of teeth;

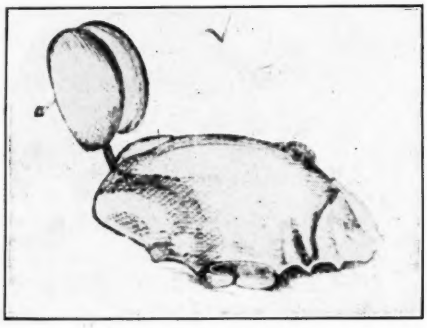


Fig. 24.

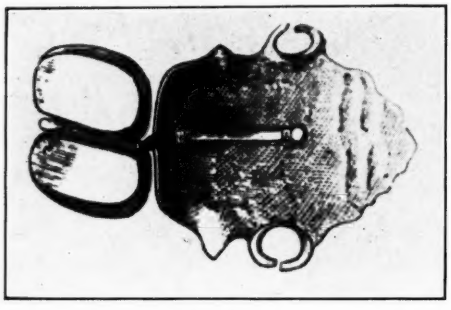


Fig. 25.

3, a slide, one inch and a half in length, and of the width and thickness of a common watch-spring; 4, a plate, larger or smaller, as the case may require, struck up in the usual way, to fit the roof of the mouth. The size and form of the valve are obtained by taking an impression of the posterior opening of the nares. The plate composing it should be struck up in two parts, front and back, which, when soldered together, makes a hollow body (*a*) as shown in Fig. 24. At the upper end of the valve a small pin is soldered, the point of which looks downward, and of sufficient thickness to fit very tightly in one end of the spiral spring. The spiral spring must be made of such a length as will permit the valve to rest slightly upon the upper surface of the remnants of the lost velum. The slide has a pin in the posterior end, looking upward to receive the other end of the spiral spring before described. The anterior

end of the slide has a small button looking downward. The slide is attached to the plate by two small clasps. The plate may be made to cover the entire roof of the mouth, when necessary; or it may be made only sufficiently large to permit the mounting of the slide. These different plates, when put together, particularly if the plate is to cover the whole roof of the mouth, make a plate of the form represented by Fig. 24. Fig. 25 shows the attachment of the spiral spring to the valve and slide (*cc*). The staples (*bb*) confine the slide to the plate, and there is a button (*d*) on the end of the slide, by which the valve may be set back or forward, as desired by the patient, without removing the plate from the mouth.

"The plate should be made to fit the several parts for which it is intended with great exactness. The plate must fit the roof of the mouth, and the teeth to which it may be secured, in a faultless manner. The slide must be arranged so as to permit the valve to be drawn so closely against the posterior opening of the nares as to close them, or to be pushed back, so as to leave them entirely unobstructed. The spiral spring, as I have before remarked, must be made of such a length as will allow the valve to rest slightly upon the upper surface of the remnants of the lost velum. The valve should be sufficiently wide at its base to overlap the remnants of the velum so far as the parts on each side will permit without producing irritation. No other part of the valve than the base should be allowed to touch, unless when brought forward against the nares. Unless all the parts are so arranged, the palate will not be properly constructed, and will not, of course, answer the desired end.

"Thus it will be perceived that the peculiarities of this plate are: 1, a valve to fit the posterior opening of the nares; 2, the attachment of this valve to a slide, by which the patient is enabled to adjust the valve while in the mouth in such a way as to admit through the nares just the quantity of air desired; 3, the mounting of the valve on a spiral spring, which will permit it to vibrate backward and forward as the breath is inhaled or exhaled, and also to be moved by any muscular action that may remain in the remnants of the lost velum, thereby answering, to a great extent, the purposes of a velum."

It is hardly conceivable that such an instrument, bearing in no sense a resemblance to the lost organs, could possibly restore to any degree the lost functions. That it might have been of some benefit in a single case is possible; but as a principle for general application it is defective, and, in view of modern improvements, the experiment is not likely to be repeated.

SUMMARY

The trend of the medical and dental professions toward an understanding of oral lesions, malformations, and diseases has progressed mainly because of vigorous research activities, supported by monies from appropriations, direct gifts, and endowment funds.

The dental school of today has a faculty composed of Doctors of Dental Surgery, Doctors of Medicine, and some members with both degrees; furthermore, the curriculum embraces several identical courses taught in the medical schools. Thus, the dental graduate of today not only understands the mechanics of dentistry, but he is also given a medical point of view, including the basic truths of modern scientific medicine. If you eliminate the craft of dental surgery and the mechanics of dentistry in a dental graduate's completed curriculum, you have remaining the science of medicine; to designate the latter dental medicine, must imply the practice of medicine through the dental profession. In the event he chooses to prepare himself for a specialty, he may take postgraduate study. However, if oral surgery is elected, then a hospital internship will broaden his medical and surgical viewpoint. Professor Garretson of the University of Pennsylvania devoted his life establishing the field of oral surgery as a special branch, stating, "This specialty was that part of the medical and dental professions which overlapped."

As early as 1839, the year when the first dental school was organized, Dr. S. P. Hullihen foresaw the necessity of an all-embracing medical, surgical and dental understanding: and by his professional career demonstrated that it was folly to attempt treatment of diseases of the mouth without appreciation of the complex mechanisms of the whole human organism.

> Some men succeed by what they know;
> Some by what they do;
> And a few by what they are.
>
> —Elbert Hubbard.

The following are some of Dr. Hullihen's prescriptions furnished by Dr. Fundenburg, who is a nephew of Dr. Hullihen.

(a) Tooth Wash (S. P. H.)

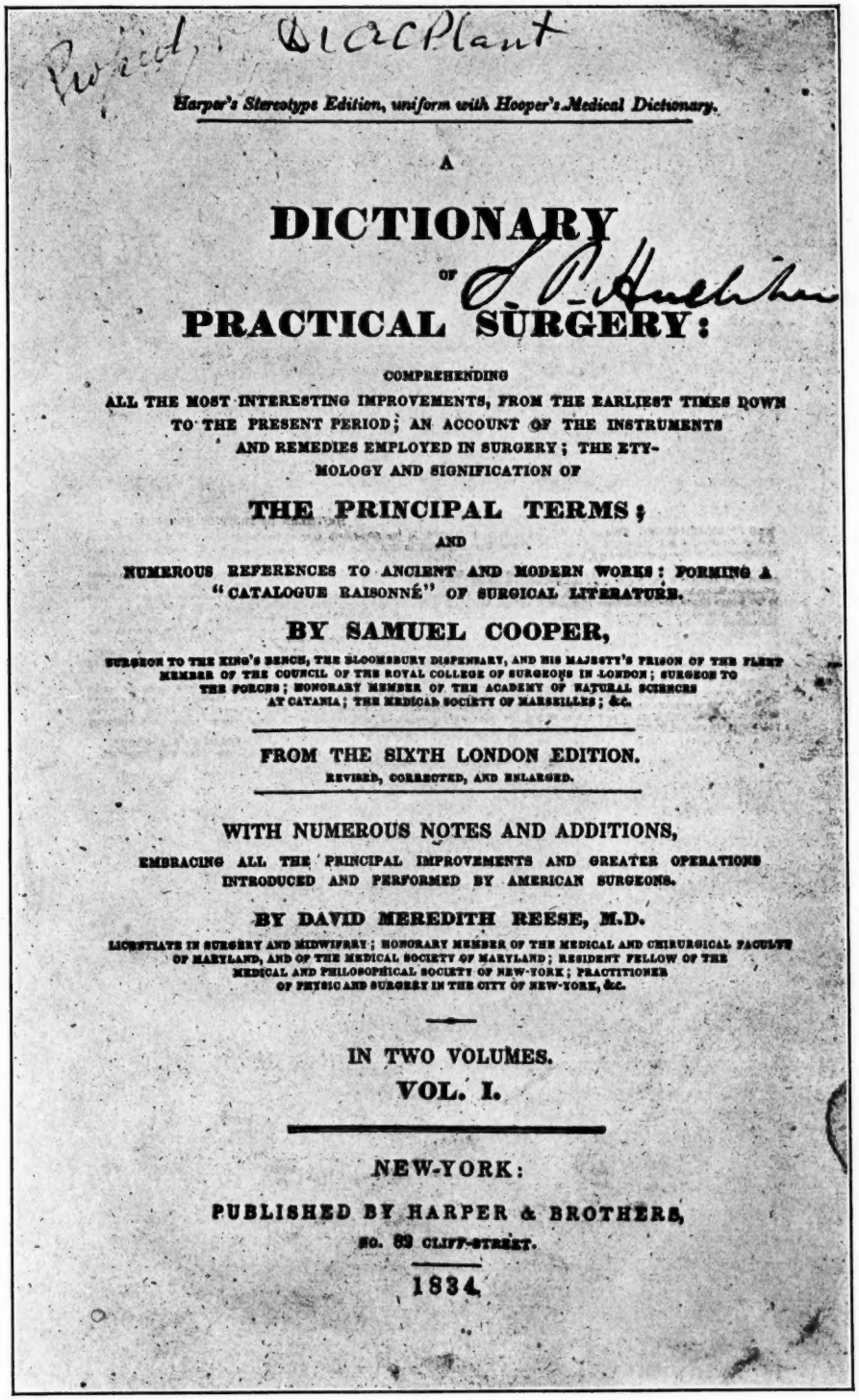
℞	Chlorid Calcis	ʒiij
	Alcohol	℥iv
	Aqua Dist.	℥iij
	Ol. Rosemary	
	Lavender	
	Bergamot	āā ʒss
	Ol. Roses	gtt. xx

M.: Color with Tr. Iodine.
Sig.: A teaspoonful in a glass of water.

(b) Aromatic Astringent Tooth Wash (S. P. H.)

℞	Tr. Myrrha	℥i
	Tr. Zingiber	
	Tr. Cardani Comp.	āā ℥ss
	Tr. Cinchona Comp.	ʒiij
	Tr. Capsici	ʒss
	Tr. Cinnamon	ʒj
	Ol. Roses	gtt. xij
	Alcohol	℥jss
	Tr. Crocus	ʒj

M.: et filter.



Harper's Stereotype Edition, uniform with Hooper's Medical Dictionary.

A

DICTIONARY

OF

PRACTICAL SURGERY:

COMPREHENDING

ALL THE MOST INTERESTING IMPROVEMENTS, FROM THE EARLIEST TIMES DOWN TO THE PRESENT PERIOD; AN ACCOUNT OF THE INSTRUMENTS AND REMEDIES EMPLOYED IN SURGERY; THE ETYMOLOGY AND SIGNIFICATION OF

THE PRINCIPAL TERMS;

AND

NUMEROUS REFERENCES TO ANCIENT AND MODERN WORKS: FORMING A "CATALOGUE RAISONNÉ" OF SURGICAL LITERATURE.

BY SAMUEL COOPER,

SURGEON TO THE KING'S BENCH, THE BLOOMSBURY DISPENSARY, AND HIS MAJESTY'S PRISON OF THE FLEET; MEMBER OF THE COUNCIL OF THE ROYAL COLLEGE OF SURGEONS IN LONDON; SURGEON TO THE FORCES; HONORARY MEMBER OF THE ACADEMY OF NATURAL SCIENCES AT CATANIA; THE MEDICAL SOCIETY OF MARSEILLES; &c.

FROM THE SIXTH LONDON EDITION.

REVISED, CORRECTED, AND ENLARGED.

WITH NUMEROUS NOTES AND ADDITIONS,

EMBRACING ALL THE PRINCIPAL IMPROVEMENTS AND GREATER OPERATIONS INTRODUCED AND PERFORMED BY AMERICAN SURGEONS.

BY DAVID MEREDITH REESE, M.D.

LICENTIATE IN SURGERY AND MIDWIFERY; HONORARY MEMBER OF THE MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND, AND OF THE MEDICAL SOCIETY OF MARYLAND; RESIDENT FELLOW OF THE MEDICAL AND PHILOSOPHICAL SOCIETY OF NEW-YORK; PRACTITIONER OF PHYSIC AND SURGERY IN THE CITY OF NEW-YORK, &c.

IN TWO VOLUMES.

VOL. I.

NEW-YORK:

PUBLISHED BY HARPER & BROTHERS,

NO. 82 CLIFF-STREET.

1834.

Fig. 26.—A book from the Hullihen library collection.

(c) Tooth Paste (S. P. H.)

℞	Pulv. Pumex	
	Pulv. Sapo Hispan	āā ℥iv
	Pulv. Alumen Exic	
	Pulv. Bole Armenian	āā ℥xij
	Pulv. Florentine Oris	
	Pulv. Creta Prep.	āā ℥xvj
	Pulv. Senna Cardamon	
	Pulv. Cortex Aurantii	āā ℥ij
	Ext. Cinchona	
	Ess. Moschus	
	Mel. Fluer	
	Ol. Cinnamoni	āā ℥ij
	Ol. Mentha Pip	℥iij
	Ol. Roses	℥j

M.: Dissolve the Ext. in one ounce of water and mix all together thoroughly; then mix with honey q.s. to make a thick paste.

Injections for Diseased Antrums

1.	℞	Tr. Myrrha	℥iv
		Tr. Galls	℥ij
		Zinci Sulphas	℥ij
		Ol. Gaultherea	℥j
		Aqua q.s. for	oij
	M.		
2.	℞	Tr. Myrrha	℥iv
		Tr. Galls	℥ij
		Acetum	℥j
		Creasote	℥i
		Aqua q.s. for	oij
	M.		

Healing Raw Surfaces (S. P. H.)

	℞	Creasote	gtt. 80
		Tr. Galls	
		Acetum	āā ℥ij

Sig.: Apply with camel hair pencil.

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American Jour. Dent. Sc., Vol. I, No. 5, 1st series, May, 1840; pp. 105-111.
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American Jour. Dent. Sc., Vol. II, No. 2, Art. III, 1st series, December, 1841; pp. 179-184.
3. Observations on Muco-Purulent Secretion of the Antrum Maxillare.
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4. Case of Aneurism by Anastomosis of the Superior Maxillare.
American Jour. Dent. Sc., Vol. IV, No. 3, Art. II, 1st series, March, 1844; pp. 160-162, ill.
5. Hare-Lip and Its Treatment.
American Jour. Dent. Sc., Vol. IV, No. 4, Art. III, 1st series, June, 1844; pp. 244-254, ill.
6. Compound Root Forceps.
American Jour. Dent. Sc., Vol. IV, No. 4, Art. IV, 1st series, June, 1844; pp. 254, 255, ill.

7. Cleft Palate and Its Treatment.
   American Jour. Dent. Sc., Vol. V, No. 3, Art. II, 1st series, March, 1845; pp. 166-174, ill.
8. Abscess of the Jaws and Its Treatment.
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9. Uvula Scissors.
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10. Cases of Tic Douloureux.
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77 Twelfth Street.

ROENTGEN TECHNIQUE FOR THE MANDIBULAR JOINT

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UNPRECEDENTED interest has been manifested recently by many dentists to understand the temporomandibular joint. This has focussed the attention of many practitioners on a suitable and practical technique to accurately demonstrate this joint roentgenographically, so that they might obtain useful information for their work.

This development, quite likely, has been further influenced by the extensive investigation of the relation of the normal and pathologic joint to the variations in bites, of interest to dentists and otologists.

There have appeared in the literature descriptions of several techniques that purport to make x-ray reproductions of this obscure joint in undistorted and correct anatomic relation. The resultant x-ray pictures are not always readily interpreted, and leave a great deal to be desired, because the radiograph of a familiar bone structure may be difficult to interpret if an unusual point of view has been chosen by the radiographer. Therefore, it is most advisable to choose a standardized and systematized projection, and one that will attain the best relationship of the part examined to the plane of the film, without requiring elaborate paraphernalia not readily available in the average dental office.

Almost all introductions to a description of a technique for roentgen examination of the temporomandibular joint contain an apology for the difficulty of registering the obscure anatomy of this region in clear, undistorted outline, and without the confusing superimposition of the opposite side or the impeding neighboring anatomic structures that block the path of the central rays.

A consideration of the location of this joint helps to explain this, and a familiarity with the anatomy of the part will help to understand the picture we are viewing, and help arrive at a more intelligible diagnosis.

This gliding hinge joint is located at the gross position of the middle cranial fossa, a segment of the skull which houses the important anatomic structures of the organs of hearing, the mastoidal and petrosal cells, and the body of the sphenoid with the sella turcica bounded by the clinoid processes. The petrous portion of the temporal bone, with the body of the sphenoid, casts obscuring dense shadows across this joint when viewing in a true lateral radiographic projection. It is necessary to minimize this superimposition by projecting the central ray from above downward, the least amount that will produce distortion of the articulation, but sufficient to project the undesired and obscuring anatomic parts mentioned, out of the field to be diagnosed.

*Riesner, S. E.: Temporomandibular Articulation: Its Consideration in Orthodontic Diagnosis, INTERNAT. J. ORTHO. 22: 1, 1936.

Dr. W. Edward Chamberlain, a brilliant roentgenologist and technician, in recently discussing a paper* on roentgenologic consideration of the temporomandibular joint, offered the following requirements a good technique must fulfill:

"1, The distance between the focal spot of the x-ray tube and the film must be set, and the same distance used in every case. 2, The angle of incidence (and emergence) of the center of the x-ray beam with reference to the patient's skull must be measurable and reproducible. 3, The angle of incidence of center of x-ray beam upon the film must be fixed and the same angle used in every

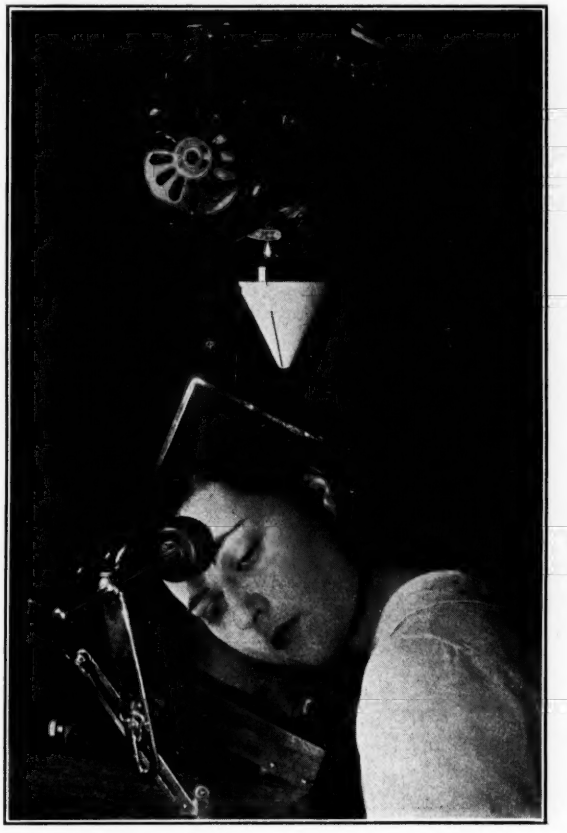

Fig. 1.—Posture for lateral projection of the temporomandibular articulation.

case. 4, If studies are made with open bite as well as with teeth in occlusion, the degree of openness must be measured and fixed, especially if the right and left joints are being compared with each other or if studies of the same joint, on different dates, are to be compared."

It is important to note when taking the two views in the cephalad-caudad position, of centric and eccentric relation, that what appeared as an inferior displacement, or posterior positioning in the lateral projection, may appear here in the true interpretation of the condylar position as a lateral or medial displacement. Interesting and often surprising reactions present when a roll of unvulcanized rubber is placed between the patient's molar teeth to simulate a bolus of food and then radiographed on both the working and the balancing

sides. Abnormal placements of the condylar head as recorded on the x-ray picture indicate strain and tension on the musculature of the part, with involving secondary reaction to neighboring nerves that results in painful annoying sequelae.

The following technique which I have been employing for a number of years conforms quite adequately with the specified requirements.

ROENTGENOGRAPHIC TECHNIQUE

The x-ray study of the mandibular articulation is made in the open and the closed positions of the joints from both the lateral aspect and the vertex projection. The latter is taken in both centric and eccentric relations.

Fig. 2.—Resultant radiograph of temporomandibular articulation with patient in posture shown in Fig. 1.

It is essential to determine the position of the condyle in three planes, namely, the anteroposterior relation, the vertical position as it is related to the roof of the mandibular fossa and articular eminence, and finally its medial-lateral relationship. The latter is determined from a roentgenogram taken in the cephalad-caudad or vertex projection.

I employ the headstand mentioned and described in the INTERNATIONAL JOURNAL OF ORTHODONTIA in the earlier article on technique. It is placed on a firm table and adjusted to a 15 degree angle from the horizontal. A cassette with two medium-fast intensifying screens, detail or par speed, is loaded with an Eastman 8 × 10 superspeed film, and placed in the tunnel. A lead marker is placed on the corner of the cassette to identify right or left side.

Lateral Projection.—In taking the picture of the lateral projection the patient is seated in a chair facing the headstand. The head is placed over the cassette in the lateral inclined position, resting on the ear of the side to be radiographed, the pinna not folded forward. The condylar region is centered on a cross hair of the film holder with the Frankfort eye-ear plane parallel to a line etched on the face of the cassette, and with the patient's midsagittal plane parallel to the plane of the film. This is checked by a little device on the holder that spots the two ear holes directly over each other, thus insuring a correct parallel relation of the midsagittal plane with that of the film. (Fig. 1.)

The cone is focussed directly above the head, so that the angle of incidence is two inches above the external auditory meatus, and about one-half inch in front of this landmark, the region of the temporomandibular joint. This is approximately an anode-film distance of fourteen to fifteen inches. With a Potter-Bucky diaphragm, it is necessary to employ a thirty-inch distance.

Fig. 3.—Posture for radiographing temporomandibular joint in cephalad-caudad (antero-posterior) incidence. (Radiography and Clinical Photography.)

The exposure time is about four seconds with a 65 kilovolt peak machine, using 10 milliamperes or about 40 milliampere seconds. The time must be varied to accommodate the different types of patients and different speed of screens, using as low as two to three seconds on children, and six seconds on heavy obese adults. The time is also proportionately shortened when using extra fast intensifying screens. (Fig. 2.)

The open-bite position should be made with a bite block 1.25 inches (3 cm.) in height.

Cephalad-Caudad Projection.—The vertex or cephalad-caudad exposure requires a machine of higher potential than the average dental unit because of the heavy thickness traversed by the central ray. The factors, therefore, are given for only a machine of greater capacity.

The patient rests almost supine against the table with the foramen magnum posed over the center of the Potter-Bucky diaphragm or cassette, which is

caudally inclined at an average angle of 35 degrees to the horizontal. The chin is extremely flexed. A four-inch compression band over the frontal eminence helps immobilize the patient. (Fig. 3).

The central ray is projected at a point in the midline, exactly 3 inches above the nasion, where a plane from the external acoustic meatus intersects it. This plane is usually perpendicular to the horizontal plane. For the average medium adult and a 75 kilovolt peak and 30 milliamperes at a 30-inch anode-film distance employed, a three-second exposure is made, which amounts to 90 milliampere seconds, requiring the use of ultraspeed screens and a Potter-Bucky diaphragm.

If the patient has a short fat neck, and it is impossible to obtain extreme flexion of the chin, the plane of intersection will not be perpendicular. Hence it is necessary to angulate the central ray caudally, or to increase the angle of inclination of the headrest to coincide. The median plane is vertical. The central ray enters the head between the frontal eminences.

Fig. 4.—Radiograph of a patient made by employing posture shown in Fig. 3.

The cephalad-caudad position is particularly valuable when investigating mandibular joints that manifest clinical disturbances, and it can also be employed as a follow-up in those cases which require it, as indicated by the picture of the sagittal projection (Fig. 4).

The Vertex-Mental Projection.—The vertex-mental or supero-inferior projection (Hirtz) is another manner of demonstrating the medial or lateral position of the condyle heads as they are related to the median plane of the skull. The method is a little simpler than the cephalad-caudad exposure and takes its name from the anatomic regions it traverses, just as the previous exposure was identified by the directional position of central rays, from the head toward the back.

The patient is seated at the table on which the head positioner is placed. The tunnel positioner is angulated approximately 30 degrees from the horizontal.

The patient's chin is extended to the upper edge of the cassette, the head hyperextended, so that the center is midway between the chin and the larynx. The tunnel angle may, however, be altered until the central ray passes through the sella turcica point, which is one inch in front of and above the external auditory

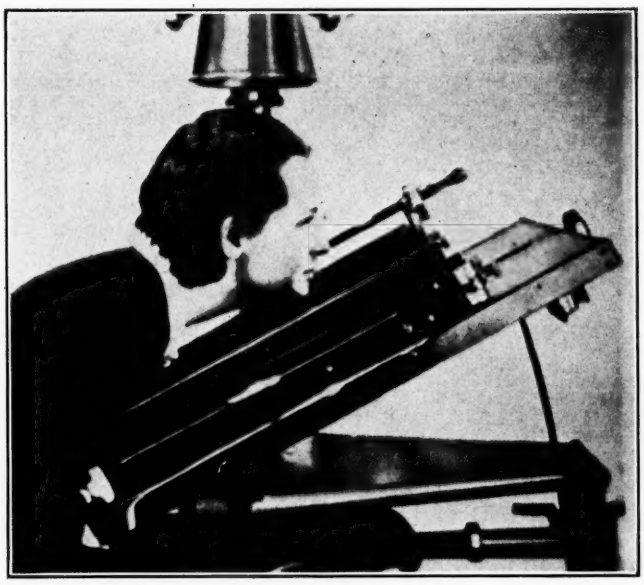

Fig. 5.—Posture for vertex-mental (Hirtz) projection (supero-inferior) of the mandible. (Radiography and Clinical Photography.)

Fig. 6.—Radiograph made by employing posture (supero-inferior) shown in Fig. 5. (Radiography and Clinical Photography.)

meatus. (Fig. 5.) By this maneuver the base line of the skull approaches the horizontal, and the axis of the body of the mandible is also almost horizontal. The median plane is vertical. A four-inch compression band is placed over the vertex to immobilize the patient.

The central ray passes through the sella point (which is approximately one-third the distance between the external acoustic meatus and the outer canthus of the eye), and is projected perpendicularly to the horizontal plane. The anode-

RECAPITULATION OF TECHNICAL FACTORS FOR TEMPOROMANDIBULAR ARTICULATION

I. LATERAL PROJECTION

Surface anatomic landmarks:	External acoustic meatus and lowest point on infraorbital ridge.
Internal radiographic landmark:	Mouth closed for condyloid process of mandible. Mouth open for mandibular fossa.
Posture:	Patient seated erect. Lateral aspect of head posed on Potter-Bucky diaphragm or cassette, which is caudally inclined 15 degrees to the horizontal; so articulation to be radiographed is immediately over its center. A vertical plane passing through the lowest point on the infraorbital ridge and the external acoustic meatus is parallel to lower edge of film (Frankfort horizontal plane). Median plane parallel with plane of film. Interpupillary line perpendicular to film surfaces.
Immobilization:	Either a compression band or head clamps. In open mouth position, use bite block to hold jaws 1 to 1¼ inches apart, depending on patient.
Projection of central ray:	Central ray enters skull approximately 2 inches above and one-half inch anterior to external acoustic meatus, in both closed and open mouth positions. It emerges at required temporomandibular joint.
Stereoscopy:	Right and left stereoradiographs in closed mouth position are valuable, in addition to the single picture, or preferably stereoscopic right and left projection in open mouth position.
Radiographs:	Show relationship between mandibular fossa and condyloid process of mandible. In closed mouth position, condyle is within mandibular fossa. In open mouth position, condyle moves about one-half inch downward and forward from fossa to rest opposite articular eminence.

TECHNICAL FACTORS	SMALL PATIENT	DENTAL UNIT TYPE	MEDIUM PATIENT	DENTAL UNIT TYPE	LARGE PATIENT	DENTAL UNIT TYPE
Thickness traversed by central ray	5½		6		6½	
Kv.P.	68	65	72		75	
Ma.	30	10	30		30	
Anode-film distance	30″	15″	30″	15″	30″	15″
Exposure	4 sec. with Bucky	3 without Bucky	4 sec. with Bucky	5 without Bucky	4 sec. with Bucky	6 without Bucky

Film: Eastman ultraspeed.
Cone: Small.
Tube: Fine line focus.
Diaphragm: Potter-Bucky.
Screens: Medium speed.
Development: Time temperature.

film distance is 30 inches when employing the Potter-Bucky diaphragm. Using Eastman superspeed 8 × 10 film in a cassette, with superspeed screens and 80 kilovolt peak and 30 milliamperes, an exposure of four seconds is indicated for an average individual with the skull distance of about 9 inches. (Fig. 6.)

II. Cephalad-Caudad Projection

Surface anatomic landmarks:	External acoustic meatus and a point in median plane over frontal bone, exactly 3 inches above nasion.
Internal radiographic landmarks:	Temporomandibular articulation.
Posture:	Patient supine. Foramen magnum posed over center of Potter-Bucky diaphragm or cassette which is caudally inclined at average angle of 35 degrees to horizontal. Chin extremely flexed.
Immobilization:	Four-inch compression band over frontal eminence.
Projection central ray:	Central ray projected in intersection of median plane and a transverse plane passing through a point on frontal bone exactly 3 inches above nasion and external acoustic meatus. This plane usually is perpendicular to horizontal plane. If patient has short fat neck and it is impossible to obtain extreme flexion of chin, plane of intersection will not be perpendicular. Hence it is necessary to angulate central ray caudally or increase angle of inclination of headrest to coincide. Median plane vertical. Central ray enters head between frontal eminences.
Stereoscopy:	Stereoradiograph made in normal projection for first exposure. The second exposure 2½ inches cephalad.
Radiographs:	Show both condyloid processes of mandible, mandibular fossae, necks of condyles, and anteroposterior aspects of joint surfaces.

Technical factors	Patient		
	Small	Medium	Large
Thickness traversed by central ray	6″	6½″	7″
Kilovolt peak	72	75	78
Milliampere	30	30	30
Anode-film distance	30″	30″	30″
Exposure	3 sec.	3 sec.	3 sec.

Film: Eastman superspeed.
Cone: Large.
Tube: Fine line focus.
Diaphragm: Potter-Bucky.
Screens: Superspeed.
Development: Time temperature.

III. Vertex-Mental or Supero-Inferior Projection

Surface anatomic landmarks:	Point one-third the distance between external acoustic meatus and outer canthus of eye.
Internal radiographic landmarks:	Entire contour of mandible.
Posture:	Patient sitting. Chin extended on Potter-Bucky diaphragm which is so angulated that long axis of mandible becomes approximately horizontal; median plane vertical.
Immobilization:	Four-inch compression band over vertex.
Projection central ray:	Central ray projected perpendicularly to horizontal plane in coronal plane passing through point one-third the distance between external acoustic meatus and outer canthus of eye.
Stereoscopy:	Stereoradiographs made 1¼″ caudad and cephaloward, respectively, from normal projection.

Technical factors	Patient		
	Small	Medium	Large
Thickness traversed by central ray	8″	9″	10″
Kilovolt peak	76	80	85
Milliampere	30	30	30
Anode-film distance	30″	30″	30″
Exposure	4 sec.	4 sec.	4 sec.

Film: Eastman superspeed.
Cone: Large.
Filter: 1 mm. aluminum.
Screens: Eastman superspeed.
Development: Time temperature.

136 East Thirty-Sixth Street

TRAUMATIC CYST IN THE MANDIBLE

A Case Report*

Charles J. Smith, D.M.D., and Albert A. Barrows, M.D., Providence, R. I.

TRAUMATIC cysts in the mandible occur generally in young patients. Their onset can usually be associated with trauma; though this may have occurred a considerable time before the patient presents for treatment and may be remembered only on careful questioning, or may have been entirely forgotten. The patient generally has a swelling on the face which brings him to the clinic. Involvement of the mandibular nerve may or may not cause paresthesia or dull sensation of pain.

Schneider (1931), Blum (1932), and Thoma (1934) have reported cases, and have pointed out the pathogenesis. The trauma instead of causing fracture as it would in the bone of an older person, causes intraosseous hemorrhage instead. With a large central artery, such as is found in the mandible, bleeding may be extensive and a large hematoma results. The blood clot which causes pressure produces stasis, and the irritation of the decomposing fibrin results in resorption of the bony trabeculae of the spongiosa. The infarct is encapsulated by a fibrous membrane along the wall of the cyst, and the contents are found to be a fluid made up of the decomposed tissue and accumulated serous transudate. The cyst differs from odontogenic cysts in that there is no epithelium lining the connective tissue sac. The latter can be excised, and generally remains intact. The connective tissue lining the bone is an endosteum-like membrane of varying thickness.

CASE REPORT

Patient, Miss I. A., aged sixteen years, of Italian descent, and attending high school, complained of a swelling of the right side of the mandible, and was admitted to the Rhode Island Hospital.

History.—Patient was unaware of the condition until relatives and friends remarked that the right side of the face seemed swollen. There were no sensations of fullness or pain at any time.

Physical examination was essentially negative except for the usual childhood diseases, and family history was negative also.

Examination of the oral cavity disclosed a healthy mucosa, teeth in good condition, and the absence of the mandibular left first molar, which patient stated was extracted at the age of eight years. Upon palpation there was a marked bulkiness to the right mandible, extending from the cuspid to the ramus. Occlusion was poor, although all the teeth except the right mandibular molars

*From the Rhode Island Hospital.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 1.—Right roentgenogram taken previous to operation, showing unerupted maxillary third molar, absence of mandibular third molar, vast cystic area and teeth in occlusion.

Fig. 2.—Left roentgenogram showing unerupted maxillary and mandibular third molars, and lack of occlusion.

Fig. 3.—Roentgenogram taken eleven months later showing almost complete regeneration of bone.

and premolars appeared in good position. An upward displacement of the mandibular right molars and premolars prevented the remaining teeth from being brought in contact.

Roentgen Examination.—Extraoral roentgenograms of the right side (Fig. 1) depicted a vast osteolytic area. It was well circumscribed, and extended from the mandibular cuspid to the ramus, and from the alveolar crest to the lower border of the mandible. Here a marked bulkiness was noticed, especially when compared with the corresponding area on the opposite side. The roentgenogram showed also a partially formed and unerupted maxillary and mandibular third molar on the left (Fig. 2), and a partially formed and unerupted maxillary third molar on the right, but no evidence of a third molar in the mandible.

Roentgen Diagnosis.—Follicular or traumatic cyst.

Operation.—Because of the extensive destruction of bony substance, metal bands were fitted to various teeth of the maxilla and the mandible so that the jaws could be maintained in proper relationship in case fracture should result from the operation.

Under ether anesthesia, with Dr. Albert A. Barrows assisting, an incision was made extending from halfway up the ramus, downward buccally along the necks of the molars and premolars to the mesial of the cuspid. A mucoperiosteal flap was turned downward. The underlying bone was found to be parchment-like in character. It was completely removed as far as the lower border. No epithelial lining was encountered anywhere, and the cavity was found filled with blood. Evacuation disclosed a large, smooth and well-circumscribed cavity with the mandibular nerve hanging loosely throughout.

The molars and the premolars were extracted, and the mental branch of the nerve was excised. The severing of the mental nerve was done to avoid future neuralgic pain that might be caused by scar. After the extraction, the remaining teeth came into occlusion. The buccal flap was sutured back tightly, in contact with the lingual bony plate. An external bandage was applied so as to exert pressure and collapse the cavity, forestalling a long period of treatment.

Postoperative Diagnosis.—Because of the lack of any cystic lining it is believed that this was a case of traumatic cyst. The injury, in all probability, occurred some time ago, perhaps destroying the enamel organ of the right mandibular third molar.

Result of Operation.—Recovery was uneventful, and a year and a half later a prosthetic appliance was constructed to supply the missing teeth. Roentgen pictures taken three months later showed bone repair; eleven months later almost complete regeneration (Fig. 3).

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The Human Face. A Symposium. Dental Cosmos, Philadelphia, 1935.

On account of its complexity, an understanding of the human face can be attained only by a study of the various sciences involved: biology, anthropology, embryology, anatomy, physiology, psychology, endocrinology, neurology, psychiatry, and dentistry. For this reason, contributions of these sciences have been collected into a symposium.

The first chapter, "The Origin of the Human Face: A Study in Paleomorphology and Evolution," by William K. Gregory, deals with the phylogenetic development from fish to amphibians, amphibians to reptiles, reptiles to mammals and birds, and mammals to men; ". . . so fish faces gave rise to amphibian faces, these were changed into the faces of reptiles, and reptilian faces were transformed, on one hand, into those of birds, and, on the other, into the faces of mammals, including man. . . . Man is, in short, a transformed fish and from the fish he inherited, by way of a long line of ascending forms, his backbone, skull and ribs, his arms and legs and even the main features of his face." Following this general idea, the various features are discussed in greater detail; and their evolution is traced, separately, for the mouth, the mandible, the jaw muscles, the temporomandibular articulation, and the upper jaw bones. The broadening of the brain forced, by increasing the distance between the glenoid articulations, the posterior ends of the mandible farther apart. This enlarged diameter between the molars, together with the dwindling size of the canines, and the shortening of the tooth row as a whole, is chiefly responsible for the characteristic human features. The evolution of the dentition from fish to man starts with tooth germs which cover the skin around the mouth, and which are only superficially located, until the teeth on the roof of the mouth and on the inner side of the mandible are eliminated, leaving only the marginal teeth which were transmitted to the mammals, with their roots deeply embedded in the jaws. Then followed the transition of tooth form which eventually led to the quadrangular type of upper molar, and to the five-cusped mandibular molar of man.

The ontogenetic development of the human face is covered by J. Parsons Schaeffer. While the phylogenetic aspect of the development of the human face covers a vast period of time, the ontogenetic considerations are concerned with a much shorter period, and a more restricted subject, the embryology of the human face.

Dr. Milo Hellman contributes a treatise on the "Face in Its Developmental Career." Facial differences are less marked in the pre-adult stages than in the

adult. In early embryonic times the human face can hardly be distinguished from that of the anthropoid, but at twenty-four weeks it can be definitely identified not only as human, but also as white or negro stock. Again at birth it is difficult to tell the face of a boy from that of a girl. "The developmental career of the face is consequently concerned with the unfolding of characters by which the individual or the group of individuals is typified." These characters are brought about in three ways: (1) by increase in size, (2) by change in proportion, (3) by adjustment in position.

The "Facial Expression in Emotional States" is discussed by Clifford B. Farr and Earl D. Bond. Physiognomy depends upon the permanent form of the features while expression depends upon muscular movement. Certain racial strains, for instance, have characteristic variations of facial expression which are partly due to differences in dialect. "The habitual use of certain facial muscles to express these variable sounds induces specialized muscular development." Besides these distinctive manners of speech, there are social customs, outlook on life, different climatic and environmental conditions which manifest characteristic facial expressions. In a like manner, the typical expressions of age are explained by similar principles, for instance, the production of folds due to habitual muscular actions.

R. Tait McKenzie wrote the chapter on "Human Facial Types—Facial Expressions." The facial muscles differ from the general muscular system in three particulars. (1) They do not move bone on bone, but the skin only. (2) They have no sheath, but their fibers lie scattered in the subcutaneous fat. (3) They are frequently in action unconsciously. "A smile begins by drawing outward and upward the angles of the mouth on both sides and a slight puckering of the eyes scarcely visible in youth." Pain, rage, fatigue, exhaustion and death, they all owe their characteristic expressions to contractions of facial muscle groups.

"Personality and Physiognomy" by Charles W. Burr deals mainly with two problems: (1) Can we discover the personality of a healthy man from his physiognomy? (2) Are changes in personality, occurring in consequence of disease, revealed by visible physical signs? Many diseases, for instance, dementia precox, acromegaly, and Graves' disease, have characteristic expressions which can be seen by the experienced observer. "If we had eyes to see, we could diagnose every constitutional physical disease and every fundamental disorder, and also could classify psychically every class of normal man by physical signs always found, and only found in each class." If one emotion endures for a long time, finally the muscles set and their expression cannot be overcome by transitory emotions. This is shown not only in wrinkles of expression, but in other more delicate ways.

"Abnormalities of the Facial Development Due to Endocrines" by M. A. Goldzieher demonstrates that the structural elements of the human face (skull, teeth, cartilages, muscles, fat, skin, hair, eyes) are subject to endocrine influences. The effect of dysfunction of endocrine glands is shown by the following examples: influence of the pituitary upon the development of the skull; thyroid and cranial development; gonads and skull; dental anomalies in endo-

crinopathies, changes in the facial skin, muscular tones, eyes and hair; hypothyroidism, hypogonadism, virilism; infantilism; senescence.

Edward Lodholz discusses "The Physiology of the Physiognomy and Its Value as a Measure of Depression of Personality." In order to obviate the mistakes which in former years have discredited the interpretation of human physiognomy, it is essential to confine scientific consideration to such activities of personality as occur in the facial region. The physiologic manifestations of facial expressions are: circulatory changes, muscle tone, reflexes and, under abnormal conditions, convulsions. The psychophysiologic reactions include the effector manifestations of sensations, feelings, emotions and, to some degree, thought.

"The Relation of Face, Jaws and Teeth to Human Constitution and Its Bearing on Disease" was contributed by George Draper. The author describes some of the clinical aspects of the problem as they relate to human constitution in disease in general. Measurements of a large number of individuals suffering from various diseases (nephritis and hypertension, tuberculosis, peptic ulcer, gallbladder disease, pernicious anemia) were collected into groups, each group representing one disease. Members of the same group have a remarkable similarity to each other, but indicate differences with other groups. These differences extend even to the formation of the jaw bones and to the dentitions.

The final chapter is written by J. V. Mershon, on "Facial Changes." It is presented as the findings of an eminent clinician, and it correlates many of the scientific observations, laid down in the preceding pages, with the problem of practical orthodontia. In the main, the subject of facial changes is a problem of growth and development, either of normal growth or of growth which has gone wrong. Another type of change is that of a deformed face transformed through proper treatment into a normal face. The changes are described separately for the alveolar process, the development of the normal face, abnormal facial development, the receding chin, the mandibular protrusion. Stress is laid upon the correct understanding of function. "We must realize that function is not simply use and disuse. Function includes all the actions and reactions which occur in an organism; there are chemical and physical reactions; there is a nervous reaction to malfunction. Then, too, other organs, not directly associated with the malfunctioning organ, may suffer."

This volume gives, in not much more than one hundred pages, an abundance of information on the subject of the human face. Although some of the chapters overlap, which is the drawback of every symposium of this nature, it can be said the difference in viewpoint of the various authors makes the repetition less awkward. The book is well illustrated; Dr. Gregory's chapter contains a number of fascinating figures illustrating the evolutionary stages of animals, their skulls and their teeth; Dr. Hellman adds a series of interesting tables showing stages of dental development; the chapters on facial expression are enlivened by many photographs and sketches; Dr. Draper contributes unusual semi-schematic diagrams of faces emphasizing basic proportional differences; Dr. Mershon, finally, crowns the efforts of the other authors by the reproduction, in models and faces, of beautiful results of orthodontic corrections.

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Medical Dental Relations

The White Count and Dental Infections. (Das weisse Blutbild und dentale Erkrankungen.) A. Heimers, Augsburg, Germany. Korresp. bl. Zahnärzte **60**: 55, 1936.

In twenty-four cases of different dental and oral infections blood studies were made with the following results: The red count did not show any abnormal findings. The white count showed changes in all cases. The acute, painful conditions causing suppuration or necrosis showed marked leucocytosis and neutrophilia with a decided shift to the left. These cases included dentitio difficilis, parulis, and periodontitis. In chronic conditions the author found a lymphocytosis with corresponding neutropenia and slight shift to the left.

The behavior of the neutrophiles is of great practical significance. Neutrophilia and shift to the left were found to be parallel with the virulence of the destructive processes. A slight shift in spite of severe clinical symptoms is a good sign, while a strong shift with slight clinical complaints is a warning signal. If, with a shift of the neutrophiles and leucocytes, the number of lymphocytes remains of normal percentage or if it increases slightly, it means that the resistance of the body is good.

The decrease in the number of monocytes is analogous with the decline of general health. Increase shows the passing of the crisis, and during convalescence there is often found a temporary monocytosis.

According to the author's findings there is no possibility that the blood picture will disclose separate types of disease. The information gained from a blood cell count concerns two factors: first, the nature and severity of the illness, and, second, the resistance of the body. Therefore the blood picture gives us an idea about the real condition of the patient, which in turn will allow us to draw prognostic conclusions regarding the course and termination of the infection.

Purpura Hemorrhagica With Anemia and Agranulocytopenia. (Purpura hémorragique avec anémie et granulo-cytopénie.) Lucien Lebourg, Jean Weill and Fréchin. Rev. de stomatol. **36**: 181, 1936.

In a thirty-one-year-old man affected by purpura hemorrhagica agranulocytosis set in. This was accompanied by gangrenous stomatitis, especially

affecting the gingiva and principally involving the region of the third molars. After several blood transfusions, the extraction of the four third molars (a procedure considered precarious by other writers) was well borne by the patient, and was followed by improvement in the gangrenous stomatitis so that the mucosa recovered rapidly without complications except for a bone sequestrum which occurred eight months later.

The Essential Anemias and Their Oral-Pharyngeal Symptoms. (Les anémies essentielles et leurs symptomes bucco-pharynés.) E. Benhamou. L'Odontologie **57**: 257, 1936.

In secondary anemia (in diphtheria, rheumatic fever, tuberculosis, lues, carbon oxide or benzol poisoning, focal infection, blood and intestinal disease, etc.) one finds the following oral symptoms: pale palatal mucosa, ecchymosis in the gingival area, and ulceronecrotic lesions.

In the essential anemias the author found: (1) In a case of aplastic anemia in an asthenic patient of twenty to thirty years, hemorrhages of the oral mucosa with ulceronecrotic lesions. (2) In the cases of progressive pernicious anemia (which occurs principally between the ages of forty and fifty) he finds the face inflated and of yellowish hue, pains in the tongue, and Hunterian glossitis. The tongue is "eel smooth," as if shaved, without papillae, and atrophied. (3) In hypochromatic anemia (occurring in young girls and women of thirty to forty, and often after pregnancy) the face is of lemon yellow color and thin; there is Hunterian glossitis, smooth oral mucosa, rapid tooth erosion, and dysphagia.

Studies on Secretion of Saliva in Gastric Carcinoma, Pernicious Anemia and Gastric Achylia. G. Fabian. Ztschr. f. klin. Med. **131**: 403, 1937.

The author finds that a deficient gastric secretion is always accompanied by a reduction in the salivary secretion. The lowest values were obtained in those cases in which the gastric mucosa was most severely impaired, namely, in pernicious anemia. The connection between the secretory action of the gastric and salivary glands is established, but the causative factors are not as yet understood. The rhodan content of saliva is also most severely impaired in gastric cancer or in other disorders leading to cachexia.

Practical Observations Regarding the Relation Between Oral Pathology and Diseases of the Eyes. Francis E. Helmore. Dent. J. Australia, No. 7, 1935, No. 8, 1936.

Many diseases of the eye may be due to focal infection, and in others healing may be delayed on account of dental and oral disease. Most of the diseases in this group affect the choroid. The bacteria found are generally streptococci. The dentist has a great responsibility and should work in harmony with the ophthalmologist.

Amaurosis Following Dental Infection. (Amauros efter tandinfektion.) Gunnar Redell. Sved. Tandlak. tidskr. No. 6, 1936.

The author first cites cases from the literature. Courteix in a statistical presentation found 88 cases of orbital phlegmon caused by dental infection in the maxilla, and six cases in the mandible. Loeb gave as principal cause careless probing, curetting, etc. Blindness is caused by thrombosis or bacterial activity, and often there is danger of death through meningitis or septicemia. There are four ways for dental infection to reach the orbit: (1) by direct extension through soft tissue, or periosteal involvement; (2) by progressive osteitis from the alveolar socket. This according to Thibault is of rare occurrence in adults but common in children on account of anatomic conditions. (3) By involvement of the paranasal sinuses, particularly the antrum. Sixty per cent of all orbital phlegmons are due to this cause, according to Birch-Hirschfeldt. (4) Via the lymph or blood vessels.

The author describes a case of amaurosis in a boy ten years old, due to acute suppurative periodontitis. After extraction of the tooth (second premolar) a phlegmon formed in the orbit through infection of the maxillary sinus and ethmoid cells. There was chemosis, exophthalmos, and fixation of the eyeball. The condition developed rapidly; in six days blindness was complete and after treatment of the infection, remained.

Effect of Dental Infections on the Eyes. (Les répercussions oculaires des affections dentaires.) André Rollin. L'Odontologie **57**: 523, 1936.

The author describes two classes: (1) Infectious complications in neighboring structures, which are better known and more frequent than class two. They progress by way of soft tissue, through the osseous structures, the maxillary sinus, or the blood vessels. (2) The complications may be due to either reflexes or infection, such as septicemia with ocular metastases. Nerve reflexes are due to pulpitis spreading by way of the ramus ophthalmicus, radiating to the eye. Motor disturbances of dental origin reach the muscles of the eye by way of the fifth nerve, and may cause strabismus. Vasomotor and trophic disturbances may also be of dental origin, particularly episcleritis. Secretory reflex disturbances of the lacrimal glands, causing lacrimation, may be due to pulpitis of maxillary teeth.

Editorial

Guerrilla Warfare

GUERRILLA warfare under the guise of intellectual righteousness rides again! Let us take a look at the riders. Several years ago the American College of Dentists was "stacked" with the American Association of Dental Editors by a handful of its more ambitious members for the explicit purpose of systematically spreading propaganda, getting into dental politics and hurling epithets of various kinds at all independent dental journals. Unfortunately just then the American College of Dentists stepped out of character and permitted itself to become the leading jester in the court of dentistry; just then it cast aside its scintillating robe symbolic of an honor society and allowed itself to become another organization with intellectually closed minded leaders with slapstick programs designed to detract from its prestige and original purpose. Like the rural clergyman who stepped out of character and foolishly umpired a hotly contested baseball game on Sunday afternoon for his flock, he then and there substituted for his ecclesiastical prestige and purpose something spurious, not in keeping with his true purpose in life, just because he failed to discriminate between the sublime and the ridiculous.

Some editor has said that "Hell is filled with starry-eyed ex-reformers." Perhaps these terms are too indelicate for those whose minds have become short-circuited with a silly grudge. Notwithstanding, reformers are always with us; they insist that they must "carry the cross"; they drum up a following and start a drive for this, that and the other thing. Trace, for instance, the noblest motives of self-appointed dental burden bearers, and you will find that there often lurks the hope of personal gain. The sacrificing hero wants praise and the humble camp-follower will sometimes surrender everything in the hope of an assenting nod of approval from the generalissimo. Perusal of the printed propaganda of these dental journal stalwarts plainly discloses the martyr complex or hallucination that dictates the onward and upward motif of the brave little band or the "guidance of a supreme being" to lead and think for the weak and deluded unfortunates not capable of thinking for themselves. The rank and file of the membership in these small but select (not too select) organizations who financially back and sponsor these dental crusaders seem to be led like sheep and are obviously at a loss to differentiate between a bright idea and a foolish notion. Between these two divisions of cerebral creations there is indeed quite a wide and dangerous precipice that is perpendicularly downhill.

The high priests of the dental cults who are directing the journal purity "night riders" should read, re-read and read again the June issue of *Reader's Digest* wherein appears an article entitled "Witchcraft Days in Salem." They would quickly sense what thousands of the rank and file of the dental profession think of the babbling hysterics and notoriety of the swashbucklers who hunger for self-exploitation under the guise of dental chastity and righteous-

ness. This group who castigate dental journals for no reason other than that they are owned by some one else, plainly know very little about the publishing business, less about what the dental profession does not and will not read, and practically nothing at all about the mental reactions of the average dental practitioner, if their propaganda can be taken as a criterion of their aims.

The most recent gesture in the dental journal fiasco is the so-called open discussion of dental journalism, conducted in the last issue of the *Journal of the American College of Dentists.* This same journal (the purity crusader of all dentistry, the organ that spills copious crocodile tears over the plight of dental journalism) placed its March-June, 1936, issue in the mails during the month of April, 1937—*not quite a year behind time.* If this is a ludicrous criterion of editorial journalistic merit and prestige, according to the ideals of the parent body, then it is fortunate indeed that there are still independent dental journals left who regard it important to get their publication out at least within the *same calendar year* as the date which appears on the cover page and before senility has set in on the printed contents.

The whole journal campaign with its associated publicity promotion under the dental spotlight reeks suspiciously of a ravenous appetite for publicity on the part of individuals who hold jobs and, no doubt, desire new ones. The entire twenty-one-year-old campaign with boomerang results and blighted prospects for the future could have been reduced to a few paragraphs. For instance, it could have been said understandingly by these campaigners when they started their whoopee campaign, instead of admitting it later in correspondence, that the "financial support that proprietary journals receive in subscriptions from ethical dentists and from reputable advertisers tends, in a kind of competition that is against public and professional interests, to reduce the resources available to worthiest non-proprietary journals." On the other hand, they might have said equally as appropriately: "If we scouts and brushbeaters are to secure endowments for dental schools from men of means, let's destroy all independent dental journals and Diogenes will light the way."

Or, more to the point, they might have said—like the hungry cat in the same room with a fat canary—"We look with lustful and longing eyes on all advertising contracts of independent dental journals earned by advertising merit." So let it be said here that all independent dental journals are not bad, and let it further be averred that all professionally controlled journals are not good; that explains much more than does the ownership of the journal. The premise taken by this group that all independent journals are bad because they are independently owned is wrong both in fact and in principle, and such a campaign would never have been started by those who are conscious of the provisions for the freedom of the press and of speech in state and federal constitutions.

The American College of Dentists, which has sponsored these dental C.I.O. agitators, should consolidate its position, give a final shower for the blind, stupid and even eccentric leadership that has left the dental profession at large convulsed. The College should recall its Commission on Journalism, apologize to all independent dental journals for its greatest folly, and appoint a new commission on Public Relations to rebuild the good will it has lost. A

cause that becomes ridiculous is as dead as the Eighteenth Amendment, and an organization that sponsors a cause which is both dead and ludicrous should vigorously and with dispatch employ the traditional new broom and scrub the decks clean. The American Dental Association as a body is the proper organization to sponsor all important movements—not small self-appointed dental priesthoods whose motives are speculative and whose record in this fiasco reeks of what is known in everyday parlance as the tub-thumbing, swashbuckling righteousness of an unholy political caucus.

If there is anything wrong with dental journalism, there is little doubt that the journals themselves would be happy and the first to cooperate with the dental profession in looking for improvement in journalistic merit; however any such movement should be sponsored by the American Dental Association and led by those whose record of accomplishment in dental journal publication had been such that it would inspire confidence on the part of publishers that the problem was being approached from a practicable, sane and sound standpoint. The whole approach to the so-called journal problem has been amateurishly bungled.

H. C. P.

News and Notes

Harvard Society of Orthodontists

The annual meeting of the Harvard Society of Orthodontists was held May 26, at the Forsyth Dental Infirmary for Children, Boston.

Case reports were given by Dr. Frank F. Delabarre, Dr. Horace L. Howe, and Dr. William J. Speers. A chair clinic was presented by Dr. Everett A. Tisdale, Dr. Walter J. Sly, and Dr. Paul H. Newhall. Dr. Harry W. Perkins and Dr. Edward I. Silver presented treatment of cleft palate cases from the Children's Hospital. Dr. D. L. Lynch gave a demonstration of the artificial larynx. Clinics were presented by Drs. Maynard Cohen, I. D. Davis, Philip Dorenbaum, Alfred J. Oliver, Sidney Stone, M. S. Strock, and William O. Lindroth. Dr. Clyde E. Keeler was the guest speaker; his subject was "Dental Heredity."

Southern Section of Pacific Coast Society of Orthodontists

The quarterly meeting of the Southern Section was held at the University Club in Los Angeles on March 12.

Dr. Julio Endleman read a paper on "Some Diseases of the Mouth," placing special emphasis on those diseases occurring in children's mouths. Dr. Endleman followed the paper with a series of lantern slides picturing the conditions he had described. An informal discussion of the various associated problems followed.